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W.P.A. POLLUTION STUDIES
Room 507, 115 Federal Street
Boston, Massachusetts

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12 ag 4/

July 1, 1940

Department of Public Health
State House
Boston, Massachusetts

Gentlemen:

We are transmitting, herewith, a report covering sources of pollution of the Westfield River within the Commonwealth of Massachusetts, principally in the counties of Hampden and Hampshire. This report and the field work necessary thereto, has been prepared and conducted by the Work Projects Administration, Project #18120, sponsored by the Massachusetts Department of Public Health under the direction of James H. McFarland, and technical supervision of Lawrence A. Hansen.

It will be found that numerous towns are divided by the watershed line of the river. In such cases only that area contained within the Westfield River Watershed is covered herein.

It is only intended to indicate the sources of domestic sewage pollution and the sources, volumes and types of industrial wastes being discharged into the streams of this watershed area with a brief review of each municipality's situation to the end that careful consideration might be given to a comprehensive program for their regulation and with the view of focusing public attention on the need for such action.

2 W 40 dis. g.

Very truly yours,

James H. McFarland

James H. McFarland
Supervisor
WPA POLLUTION PROJECT #18120

111529

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FORLWORD

This report covers, in concise form, informational data obtained from pollution surveys of those communities within the Westfield River Valley. It deals primarily with the source of industrial and domestic wastes which pollute or tend to pollute the waters of the Westfield River, chenical analyses of water samples showing the extent of pollution in the river waters, and those means which cities and towns have adopted in their effort to correct unsatisfactory conditions.

In most cases basic technical data and computations are not included, as these are primarily of interest to the Sanitary Engineer in his planning of corrective measures, such as treatment plant design, intercepting sewers, etc., rather than necessary to a general review of existing conditions. Such supporting data has therefore been placed on file with the Massachusetts Department of Public Health and is available as the need requires.

It will be found in reviewing this treatise that specific reference is made to House Document No. 2050, a report of the Massachusetts Department of Public Health, "Sanitary Condition of Certain Rivers of the Commonwealth". This document, authorized under Chapter 49 of the Resolves of 1936, Chapter 66 of the Resolves of 1937, and Chapter 25 of the Resolves of 1938, has already summarized the results of this study. This report, therefore, is to a large degree, a detail presentation of supporting data to that section covering the Westfield River except where supplementary studies have furnished additional data.

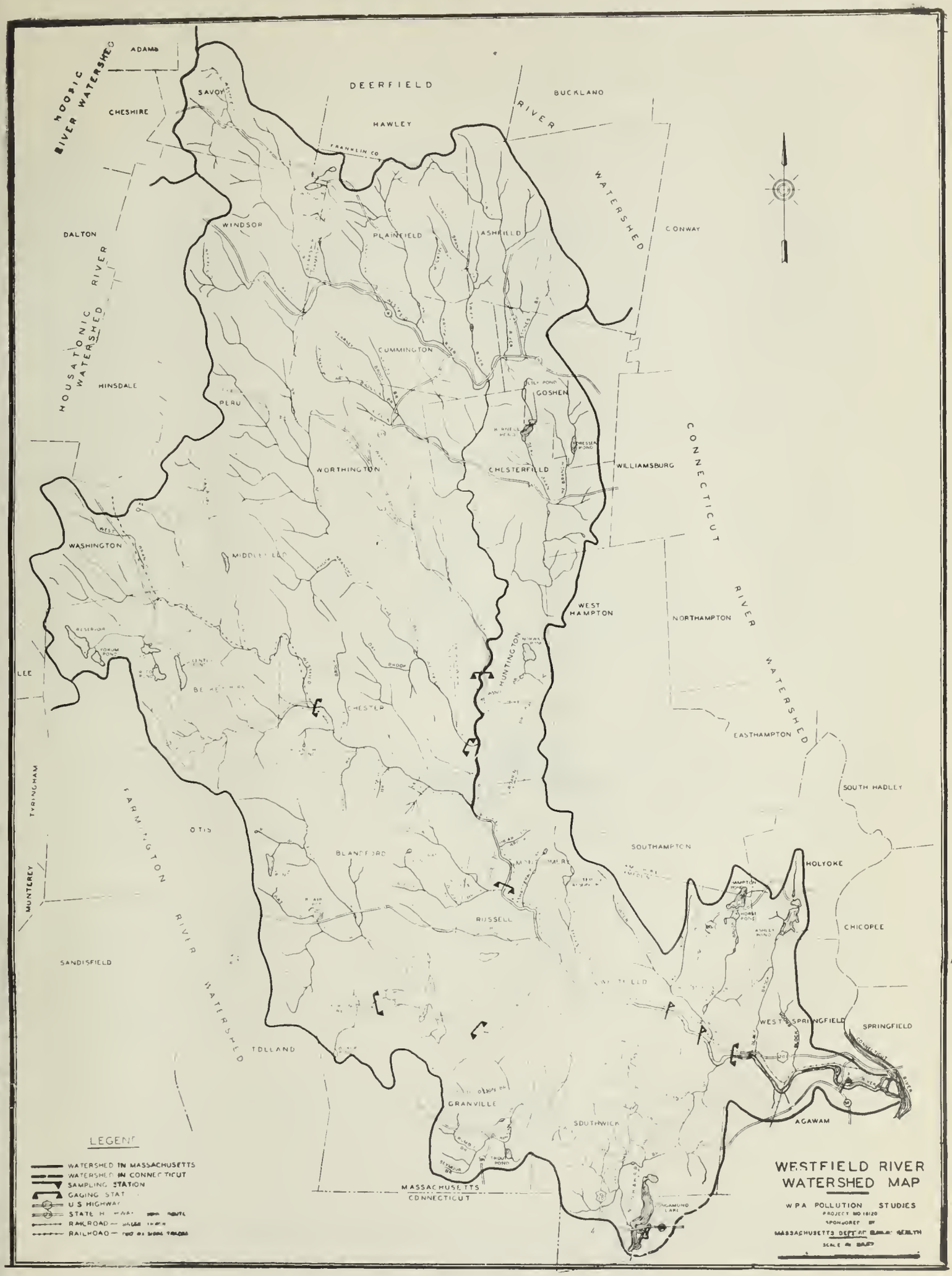
Acknowledgement is gratefully made to the valuable leadership, guidance and council given the work by Arthur D. Weston, Chief Engineer of the Department of Public Health, Messrs. Edward Wright and Joseph C. Knox of his staff, as well as Clarence I. Sterling at the laboratory at the Westfield Sanatorium, and the many city and town officials within the study area who by their close cooperation in matters dealing with their particular community made the task much lighter than would have been otherwise possible.

Grateful acknowledgement is also given to the splendid cooperation and personal effort of the project's personnel.

PART I

GENERAL INTRODUCTION

WESTFIELD RIVER


HOOSIC RIVER WATERSHED
ADAMS
CHESHIRE
SAVOY
DEERFIELD
BUCKLAND
HAWLEY
FRANKLIN CO.
RIVER
WATERSHED
CONWAY
DALTON
WINDSOR
PLAINFIELD
ASHFIELD
HOUSATONIC RIVER WATERSHED
HINSDALE
PERU
CUMMINGTON
GOSHEN
WORTHINGTON
CHESTERFIELD
WILLIAMSBURG
CONNECTICUT
WASHINGTON
MIDDLEFIELD
WEST HAMPTON
NORTHAMPTON
RIVER
WATERSHED
LEE
CHESTER
HUNTINGTON
EASTHAMPTON
SOUTH HADLEY
TYRINGHAM
FARMINGTON RIVER WATERSHED
OTIS
BLANDFORD
SOUTHAMPTON
HOLYOKE
MONTEREY
RUSSELL
CHICOPEE
SANDISFIELD
WESTFIELD
WEST SPRINGFIELD
SPRINGFIELD
TOLLAND
GRANVILLE
SOUTHWICK
AGAWAM
MASSACHUSETTS
CONNECTICUT
LEGEND
WATERSHED IN MASSACHUSETTS
WATERSHED IN CONNECTICUT
SAMPLING STATION
GAGING STATION
U S HIGHWAY
STATE HIGHWAY
RAILROAD
RAILROAD
WESTFIELD RIVER WATERSHED MAP
WPA POLLUTION STUDIES
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WESTFIELD RIVER

The Westfield River, 55 miles in length and with a drainage area of 517 square miles, being the third largest tributary entering the Connecticut River in Massachusetts, rises in Savoy and enters the Connecticut River at West Springfield. It lies in the central and southern part of Western Massachusetts with the greater portion of its watershed area in Hampden and Hampshire counties.

The topography of the basin is hilly and toward the headwaters is mountainous, being 2,500 feet above sea-level at the source. The fall is very rapid, dropping to 110 feet above sea-level at the gaging station near Westfield.

Annual precipitation taken over a number of years shows a total of 45 inches with an annual snowfall of 53 inches, from which there is a run-off of 26 inches. Average winter temperature is 26 degrees Fahrenheit and in summer 66 degrees. This is slightly cooler than other sections of Massachusetts, especially in that portion of the watershed located in the Berkshire Hills. The lower area of the watershed, particularly at West Springfield, is from 2 to 5 degrees higher in both winter and summer temperatures.

The Westfield River has three main branches, the Middle Branch, the West Branch, and the Westfield Little River, and numerous small tributaries, the slopes of which are steep and rocky. These tributaries have little storage, the rainfall run-off finding its way quickly to the main river, producing rapid fluctuations in water levels.

The Middle Branch with its headwaters in the hills of Peru, 2,200 feet above sea level, flows southeasterly through the towns of Middlefield, Worthington and Chester, entering the main river in Huntington. This branch having a total length of 19 miles adds to the rapid flow of the main river inasmuch as its descent is from 2,200 feet to 415 feet above sea level, an average drop of 105 feet per mile.

The West Branch rises in the Town of Washington 1,900 feet above sea level and flows southeasterly through Becket, Chester and Huntington. Its length is 22 miles and has a drainage area of 73 square miles.

The Westfield Little River, formed by the union of Borden and Pebble Brooks in the town of Russell, joins the main river in the adjoining City of Westfield. Borden Brook rises in Granville and

Pebble Brook in Blandford. The City of Springfield has dammed these waters to form Cobble Mountain Reservoir, now used as source of water supply.

TABLE I

Important Tributaries
of
Westfield River
in
Massachusetts

Tributary	Course (Direction of Flow)	Length (Miles)	Point of Entry (Miles Above Mouth)
Middle Branch	Southeasterly	19	24.8
West Branch	Easterly	22	23.
Westfield Little River	Easterly	5	11.5

The following cities and towns are drained by the Westfield River and its tributaries and it will be noted that there are only six which do not have an appreciable area in the Watershed.

TABLE II

Drainage Area
in
Cities and Towns
of the
Westfield River Watershed
in
Massachusetts

Cities and Towns	Total Area (Sq. Miles)	Area in Watershed (Sq. Miles)	Percent of Area in Watershed
Agawam	24.35	7.30	29.98
Ashfield	40.32	15.88	39.39
Becket	48.04	32.71	68.09
Blandford	53.41	50.29	94.16
Chester	37.10	37.10	100.00
Chesterfield	31.34	29.48	94.07

TABLE II (Cont'd.)

Drainage Area
in
Cities and Towns
of the
Westfield River Watershed
in
Massachusetts

Cities and Towns	Total Area (Sq. Miles)	Area in Watershed (Sq. Miles)	Percent of Area in Watershed
Cummington	23.18	23.18	100.00
Goshen	17.71	10.92	73.06
Granville	43.28	25.02	53.19
Hawley	31.02	1.89	6.40
HOLYOKE*	22.86	3.92	17.15
Huntington	26.84	25.03	90.00
Middlefield	24.25	24.25	100.00
Montgomery	15.13	11.83	78.19
Otis	37.90	1.71	4.51
Peru	26.10	17.38	66.59
Plainfield	21.40	19.40	90.65
Russell	18.06	18.06	100.00
Savoy	36.11	10.93	30.27
Southampton	29.00	1.00	3.45
Southwick	31.79	26.93	84.71
Tolland	32.82	1.95	5.94
Washington	38.78	15.35	39.58
WESTFIELD*	47.53	43.11	90.70
Westhampton	27.38	2.14	7.82
West Springfield	17.54	9.90	56.44
Windsor	35.26	27.70	58.71
Worthington	32.12	32.12	100.00

*Cities

FLOW DATA

Numerous gaging stations are maintained by the United States Geological Survey in the Westfield River Watershed and the data compiled from four of these Stations for the years 1926-1935 is shown in Tables IV - VII inclusive.

Drainage Areas at the various United States Geological Stations are shown in Table III.

TABLE III

*DRAINAGE AREA
OF
WESTFIELD RIVER WATERSHED

MASSACHUSETTS

Stream	Drainage Area in Sq.Miles	Areas: Lakes, Ponds, and Swamps (Sq. Miles)			
		Lakes & Ponds	Swamps	Total	% of Drainage Area
Westfield River above U.S.G. Survey Gaging Station at Knightsville, Mass.	162	.37	.12	.49	.3
Middle Branch of Westfield River, Above U.S.G. Survey Gaging Station at Goss Heights, Mass.	52.6	.01	.22	.23	.4
West Branch of Westfield River, Above U.S.G. Survey Gaging Station at Huntington, Mass.	93.7	.95	.07	1.02	1.1
Westfield Little River, Above U.S.G. Survey Gaging Station near Westfield, Mass.	48.5	b .40	0.0	b .40	b .8
Westfield River, Above U.S.G. Survey Gaging Station near Westfield, Mass.	49.7	3.08	.41	3.49	.7
Westfield River Above Mouth	51.7	3.44	.41	3.85	.7

*Source of information - Water Supply Papers 798 (Floods of March 1936) (U.S.G.S.)
bDoes not include areas of Cobble Mountain and Borden Brook Reservoir.

TABLE IV

FLOW DATA OF THE WESTFIELD RIVER NEAR WESTFIELD, MASS.
(Drainage Area 496 Sq. Miles)

(Average Flow)

Month	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile
October	1926	0.947	1927	2.56	1928	0.819	1929	0.629
November		2.56		6.77		.688		.798
December		1.29		4.21		.855		1.15
January	1927	1.48	1928	2.30	1929	1.35	1930	1.42
February		1.56		2.60		1.10		1.54
March		4.92		2.46		5.14		2.86
April		1.95		3.95		6.31		2.18
May		2.06		3.39		3.17		1.33
June		1.31		3.39		.782		1.65
July		.879		2.22		.405		.821
August		1.68		3.06		.298		.413
September		1.25		2.14		.292		.327
	Average	1.82		3.25		1.77		1.26.

C.F.S. - Cubic Feet per Second

TABLE IV (Cont'd.)

FLOW DATA OF THE WESTFIELD RIVER NEAR WESTFIELD, MASS.
(Drainage Area 496 Sq. Miles)

(Average Flow)

Month	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile
October	1930	0.296	1931	0.369	1932	1.12	1933	1.36	1934	1.49
November		.790		.466		4.33		1.06		2.34
December		.480		1.04		1.39		1.03		2.14
January	1931	.399	1932	2.80	1933	1.89	1934	1.78	1935	2.63
February		.544		1.57		1.45		.588		1.53
March		1.99		1.60		2.50		3.47		3.93
April		5.77		5.16		7.88		6.44		2.48
May		3.55		1.13		1.45		2.44		1.67
June		3.02		.611		.633		1.64		1.45
July		.859		.480		.234		.507		.962
August		.526		.310		1.11		.380		.282
September		.411		.228		4.11		2.21		.443
	Average	1.55		1.31		2.32		1.91		1.78

C.F.S. - Cubic Feet per Second

TABLE V

FLOW DATA OF THE WESTFIELD RIVER AT KNIGHTSVILLE, MASS.
(Drainage Area 162 Sq. Miles)

(Average Flow)

Month	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile
October	1926	0.784	1927	2.48	1928	0.533	1929	0.563
November		2.80		6.73		.536		.722
December		1.22		4.38		.778		1.07
January	1927	1.73	1928	2.33	1929	1.11	1930	1.69
February		1.51		2.36		.858		1.78
March		6.15		2.41		6.42		3.07
April		2.30		4.29		7.04		2.31
May		2.18		3.86		3.25		1.39
June		1.19		4.00		.630		1.74
July		.630		2.34		.189		.778
August		.833		2.74		.144		.357
September		.735		1.94		.194		.260
Average		1.84		3.31		1.81		1.31

C.F.S. - Cubic Feet per Second

TABLE V (Cont'd.)

FLOW DATA OF THE WESTFIELD RIVER AT KNIGHTSVILLE, MASS.
(Drainage Area 162 Sq. Miles)

(Average Flow)

Month	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile
October	1930	0.196	1931	0.288	1932	1.25	1933	1.36	1934	1.43
November		1.01		.396		4.45		1.06		2.27
December		.485		1.35		1.90		1.03		2.14
January	1931	.284	1932	3.12	1933	2.40	1934	1.78	1935	2.85
February		.471		1.62		1.62		.588		1.49
March		1.41		1.58		2.06		3.47		3.87
April		6.98		5.64		9.69		6.44		2.56
May		3.82		1.22		1.48		2.44		1.88
June		3.30		.457		.636		1.64		1.57
July		.944		.374		.309		.507		.932
August		.399		.206		1.52		.380		.214
September		.275		.200		4.75		2.21		.418
Average		1.63		1.36		2.65		1.91		1.80

C.F.S. - Cubic Feet per Second

TABLE VI

FLOW DATA OF THE MIDDLE BRANCH OF WESTFIELD RIVER AT GOSS HEIGHTS, MASS.
(Drainage Area 52.6 Sq. Miles)

(Average Flow)

Month	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile
October	1926	0.591	1927	3.62	1928	0.866	1929	0.468
November		2.74		6.91		.508		.830
December		.843		4.77		1.08		.964
January	1927	1.11	1928	2.21	1929	1.19	1930	1.55
February		.823		2.19		.966		1.53
March		5.55		2.51		5.98		3.17
April		1.74		4.15		7.15		2.26
May		1.98		3.62		3.45		1.19
June		.945		3.49		.791		1.29
July		.740		2.34		.217		.645
August		1.09		3.17		.156		.192
September		1.05		2.28		.156		.129
Average		1.60		3.43		1.88		1.18

C.F.S. - Cubic Feet per Second

TABLE VI (Cont'd.)

FLOW DATA OF THE MIDDLE BRANCH OF WESTFIELD RIVER AT GOSS HEIGHTS, MASS.
(Drainage Area 52.6 Sq. Miles)

(Average Flow)

Month	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile
October	1930	0.125	1931	0.232	1932	0.791	1933	1.22	1934	1.09
November		.636		.366		4.09		1.08		2.36
December		.396		1.24		1.32		1.19		2.60
January	1931	.287	1932	3.30	1933	1.88	1934	1.55	1935	3.40
February		.434		1.62		1.37		.487		1.66
March		1.76		1.62		2.19		3.83		4.52
April		6.02		5.83		8.74		1.49		2.57
May		3.38		1.12		1.18		2.45		1.72
June		2.55		.298		.562		1.81		1.34
July		.509		.402		.209		.275		1.18
August		.238		.161		1.40		.188		.156
September		.186		.084		5.60		1.59		.224
Average		1.37		1.35		2.43		1.92		1.90

C.F.S. - Cubic Feet per Second

TABLE VII

FLOW DATA OF THE WESTFIELD LITTLE RIVER NEAR WESTFIELD, MASS.
(Drainage Area 48.5 Sq. Miles)

(Average Flow)

Month	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile
October	1926	0.656	1927	3.53	1928	0.454	1929	0.728
November		2.62		8.25		.540		.924
December		1.93		4.02		.889		1.46
January	1927	3.56	1928	2.35	1929	2.76	1930	1.70
February		1.82		3.84		1.96		1.59
March		5.20		2.33		6.08		3.22
April		1.55		5.05		6.91		2.43
May		2.41		2.85		2.62		1.49
June		1.56		3.07		.485		1.66
July		.608		2.25		.115		.476
August		2.99		3.67		.066		.210
September		1.83		1.76		.126		.200
Average		2.23		3.57		1.92		1.34

C.F.S. - Cubic Feet per Second

TABLE VII (Cont'd.)

FLOW DATA OF THE WESTFIELD LITTLE RIVER NEAR WESTFIELD, MASS.
(Drainage Area 48.5 Sq. Miles)

(Average Flow)

Month	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile	Year	C.F.S.per Sq.Mile
October	1930	0.137	1931	0.194	1932	1.71	1933	0.847	1934	1.42
November		1.02		.322		5.63		.792		2.72
December		.495		.353		1.39		.967		2.29
January	1931	.480	1932	3.18	1933	1.66	1934	2.19	1935	2.56
February		1.20		1.43		1.43		.695		1.36
March		2.78		2.14		2.80		4.21		4.60
April		6.45		5.38		7.40		6.54		2.54
May		4.14		0.928		1.07		2.52		1.41
June		3.48		.903		.313		1.44		1.29
July		.637		.571		.085		.200		.460
August		.322		.171		.794		.375		.030
September		.109		.093		2.76		3.13		.346
Average		1.77		1.34		2.23		1.99		1.75

C.F.S. - Cubic Feet per Second

TABLE VIII

POPULATION
IN
CITIES AND TOWNS
OF
WESTFIELD RIVER WATERSHED
IN
MASSACHUSETTS

City or Town	County	Pop. 1935	Estimated Population in Watershed	Density per Sq. Mi. in Watershed
Agawam	Hampden	7,206	3,706	511.9
Ashfield	Franklin	918	138	8.8
Becket	Berkshire	723	633	19.4
Blandford	Hampden	469	445	8.7
Chester	Hampden	1,362	1,362	36.7
Chesterfield	Hampshire	445	420	14.2
Cummington	Hampshire	610	610	26.9
Goshen	Hampshire	257	232	21.2
Granville	Hampden	704	493	21.1
Hawley	Franklin	308	18	9.0
HOLYOKE*	Hampden	56,139	500	138.5
Huntington	Hampshire	1,345	1,345	53.7
Middlefield	Hampshire	220	220	9.1
Montgomery	Hampden	174	139	11.9
Otis	Berkshire	415	10	5.7
Peru	Berkshire	151	101	5.8
Plainfield	Hampshire	332	312	15.7
Russell	Hampden	1,283	1,283	70.6
Savoy	Berkshire	299	159	14.0
Southampton	Hampshire	954	**	**
Southwick	Hampden	1,540	1,440	53.2
Tolland	Hampden	141	20	10.3
Washington	Berkshire	252	102	7.1
WESTFIELD*	Hampden	18,788	18,688	442.8
Westhampton	Hampshire	405	**	**
West Springfield	Hampden	17,118	8,559	898.1
Windsor	Berkshire	412	202	9.6
Worthington	Hampshire	530	530	16.5
TOTALS		113,500	41,067	

* Cities
**Negligible

POPULATION

The Westfield River Watershed, comprising 28 cities and towns, of which 6 are wholly within the Watershed, has a population of 113,500 of which 41,667 or 36.71 percent live within the Watershed area.

Three of the 26 cities and towns, Westfield, West Springfield and Agawam account for 30,953 or 74 percent of the total population of the Watershed.

The population density of the entire Watershed is 81 per square mile while the density of these three cities and towns are 514 per square mile. This is due to the highly industrial areas of Westfield and West Springfield. Thus it may be seen that the Watershed as a whole is rural in character and very sparsely populated.

TABLE IX

PRINCIPAL INDUSTRIAL CITIES AND TOWNS
of the
WESTFIELD RIVER WATERSHED

City or Town	Total Population 1935	Population in Watershed	Percent in Watershed
*Westfield	18,788	18,688	99.47
West Springfield	17,118	8,559	50.
Agawam	7,206	3,706	51.43
Chester	1,362	1,362	100.
Huntington	1,345	1,345	100.
Russell	1,283	1,283	100.
Becket	723	633	87.55
Chesterfield	445	420	94.38
Granville	704	493	70.03

*Cities

AGRICULTURE

The Westfield River Basin is primarily agricultural. Steep rocky slopes necessarily confine the cultivated areas to the flats along the river valleys. Due to elevations and direction of prevailing winds the growing season is limited from 160 to 180 days.

The soil differs from other areas in the greater Connecticut Watershed where the soil is sandy. Here the soil has been derived

from glacial drifts with considerable deposits of lime.

Individual farms are larger than in other sections of the State, and vast areas are used for growing cattle feed, thus creating vast pasture lands. Dairying is of primary importance, contributing the largest share to the farm income in the State Production of milk, per can, and the percentage of whole milk sold is among the highest in the country. Potatoes and tobacco are the principal crops in the lowlands.

Over 50% of the Watershed is woodland, and yearly more land in the upper regions is given over to timberland as agricultural activities move to the lowlands, taking advantage of the milder climate and richer soil conditions of the Basin.

INDUSTRY

Industry in the Westfield Watershed covers a wide range of manufacture, with paper, fibre boxes, toy drums, corundum, textile machine parts and bicycles the more important.

These industries are located in nine of the twenty-eight cities and towns in the area near the mouth of the river, where water power plays an important part to their economic advantage.

The City of Westfield manufactures varied products, the more important of which are: boilers and radiators, casket hardware, corundum, paper, dyeing cotton thread, bicycles, motorcycles, and textile machine parts.

Russell produces the finest writing paper; Becket, cellulose; and Granville, toy drums.

FORESTRY

The major portion of the Westfield River Watershed is covered by forests, including all types of woodland, cut-over land and old fields reverting to brush and trees. With the exception of the State Forests in the towns of Peru, Chester, Blandford, Becket and Worthington, a great part of the woodland, both on the farms and outside, remains undeveloped. The Basin as a whole shows definite signs of an agricultural region slowly being abandoned and the farm lands reverting to natural woodland.

RECREATION

The Westfield River Watershed with its high elevation and natural slopes and plateaus offers an ideal recreation area for both winter and summer sports. The forests are abundant with wild

life, and the numerous rivers and brooks excellent for fishing.

The industries of the Basin are practically all within 10 to 15 miles of the mouth of the river, while the area in the upper branches of the rivers with small rambling streams are being converted to use by summer estates. Towns in this area are developing recreational facilities for both summer and winter sports.

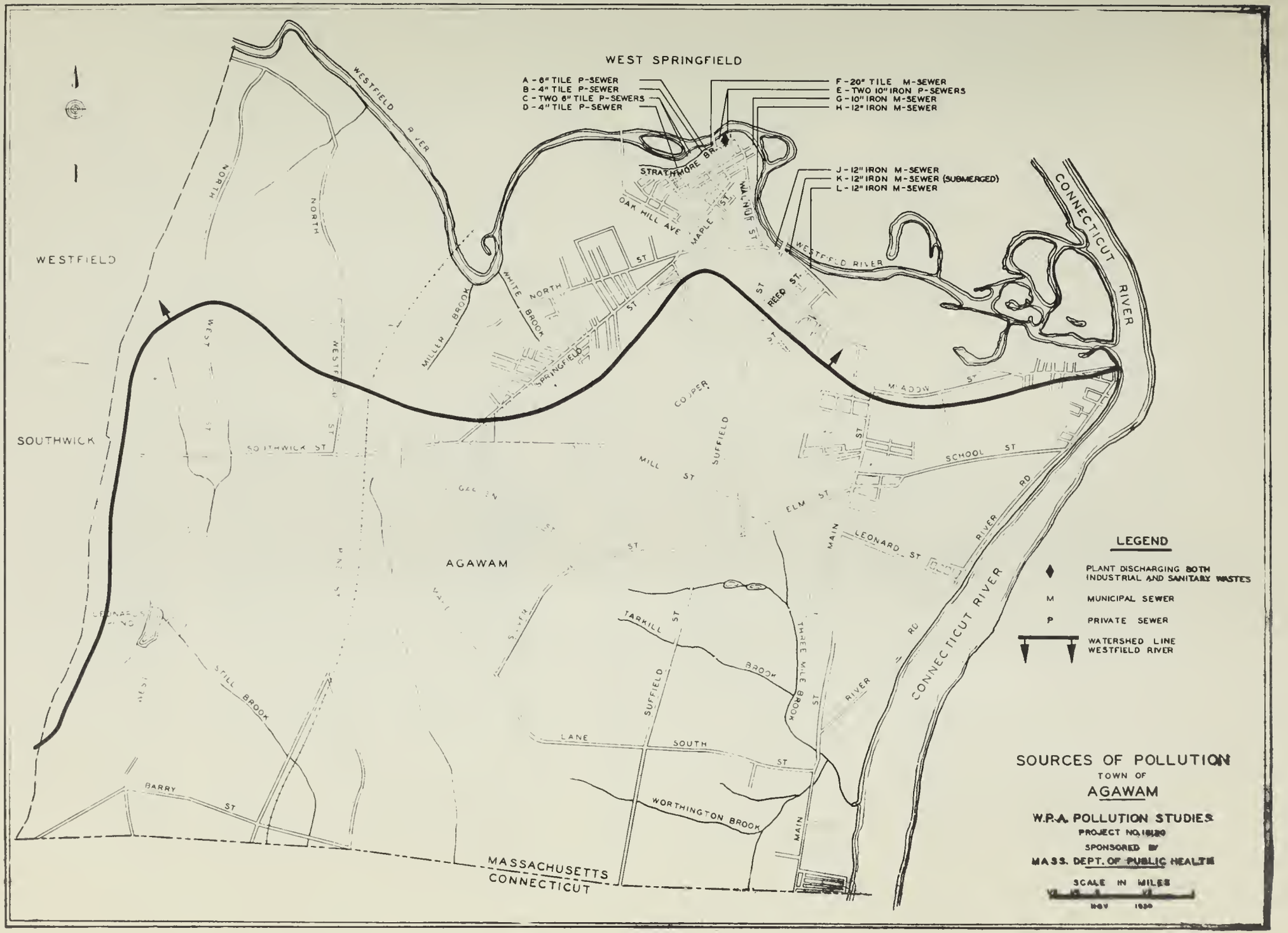
TRANSPORTATION

The Westfield River Valley has excellent transportation facilities. The Boston and Albany Railroad has its main line track from Boston to the western part of the State and upper New York running through the center of the Watershed. Federal and State Highways are maintained in all cities and towns, affording easy accessibility to the entire Basin.

The Federal Government is building one of its largest air terminals in the neighboring City of Chicopee on the other side of the Connecticut River and the City of Westfield maintains a municipal airport with regular passenger, mail and express service to the South and West. Thus it may be seen that transportation facilities are available to make this area an ideal industrial and recreational center.

PART II

DETAIL CONSIDERATIONS
OF
CITIES AND TOWNS
Within The
MASSACHUSETTS AREA
Of The
WESTFIELD RIVER WATERSHED


WEST SPRINGFIELD
A - 6" TILE P-SEWER
B - 4" TILE P-SEWER
C - TWO 6" TILE P-SEWERS
D - 4" TILE P-SEWER
F - 20" TILE M-SEWER
E - TWO 10" IRON P-SEWERS
G - 10" IRON M-SEWER
H - 12" IRON M-SEWER
J - 12" IRON M-SEWER
K - 12" IRON M-SEWER (SUBMERGED)
L - 12" IRON M-SEWER
WESTFIELD
SOUTHWICK
AGAWAM
WESTFIELD RIVER
CONNECTICUT RIVER
STRATHMORE BR.
OAK HILL AVE
MAPLE ST
MAIN ST
REED ST
NORTH ST
WHITE BROOK
MILLER BROOK
SPRINGFIELD ST
MEADOW ST
SCHOOL ST
ELM ST
MILL ST
SUFFIELD ST
SOUTHWICK ST
MAIN
LEONARD ST
RIVER RD
TARKILL BROOK
THREE MILE BROOK
LANE
SOUTH ST
WORTHINGTON BROOK
STILL BROOK
BARRY ST
MASSACHUSETTS
CONNECTICUT
LEGEND
PLANT DISCHARGING BOTH INDUSTRIAL AND SANITARY WASTES
M MUNICIPAL SEWER
P PRIVATE SEWER
WATERSHED LINE WESTFIELD RIVER
SOURCES OF POLLUTION
TOWN OF
AGAWAM
W.P.A. POLLUTION STUDIES
PROJECT NO. 16120
SPONSORED BY
MASS. DEPT. OF PUBLIC HEALTH
SCALE IN MILES
NOV 1936

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AGAWAM

Area - 24.35 Sq. Mi. Area in Watershed - 7.50 Sq. Mi.

Population 1935 - 7,206 Est. Pop. in Watershed - 3,706

The Town of Agawam is situated in the southern section of Hampden County, bounded on the north by West Springfield, on the east by Springfield and Longmeadow, on the south by the State of Connecticut, and on the west by Southwick and Westfield.

Only 29.98% of the total area of Agawam lies within the Westfield River Watershed, comprising an extremely narrow section contiguous to the Southwick border and a relatively wider area roughly paralleling the winding course of the river, which, flowing in a general southeasterly direction to its confluence with the Connecticut River, forms the Town's northern boundary. The larger, though less densely populated portion of Agawam lies within the Watershed of the Connecticut River.

Water supply is obtained from the City of Springfield municipal supply and is distributed by gravity to approximately 1,500 services, 62% of which are metered.

Agawam maintains a municipal sewerage system, discharging raw, untreated sewage directly into the Westfield River or tributary water-courses through 6 outlets, only one of which is submerged, the others being so-called bank outlets, while 7 private sewer outlets also discharge untreated wastes directly into the river or Strathmore Brook (a minor tributary). With approximately 881,800 gallons of untreated industrial wastes discharged daily into the river, a pollution problem has been created which has received the attention of the Massachusetts Department of Public Health in its report to the Legislature of 1938, House Document #1735, wherein the Department recommended that the City of Springfield, acting jointly with the towns of Agawam, Longmeadow and West Springfield, study a plan for the collection and treatment of the sewage of these municipalities at works to be constructed in Agawam near the mouth of the Westfield River.

Acting on the Department's recommendation, Agawam is now constructing intercepting sewers for the collection of its sewage for treatment at this recently completed disposal plant.

WASTE OUTLETS

IN

AGAWAM

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	6" Tile	North Bank Strathmore Brook	Sewage	200' West of West Springfield Bridge
B	4" Tile	North Bank Strathmore Brook	Sewage	400' West of West Springfield Bridge
C	2-6" Tile	South Bank Westfield River	Sewage	From House 400'-430' West of West Springfield Bridge
D	4" Tile	North Bank Strathmore Brook	Sewage	From House at Foot of Unnamed St.
E	2-10" Iron	South Bank Westfield River	Industrial & Sanitary	From Paper Mill near West Springfield Bridge
F	20" Tile	South Bank Westfield River	Raw Sewage	Near West Springfield Bridge - Town Sewer
G	10" Iron	Into West Bank of Tailrace to Westfield River	Raw Sewage	At Foot of High Street - Town Sewer
H	12" Iron	Into West Bank of Tailrace to Westfield River	Raw Sewage	At Gosselin's Grove - Town Sewer

WASTE OUTLETS

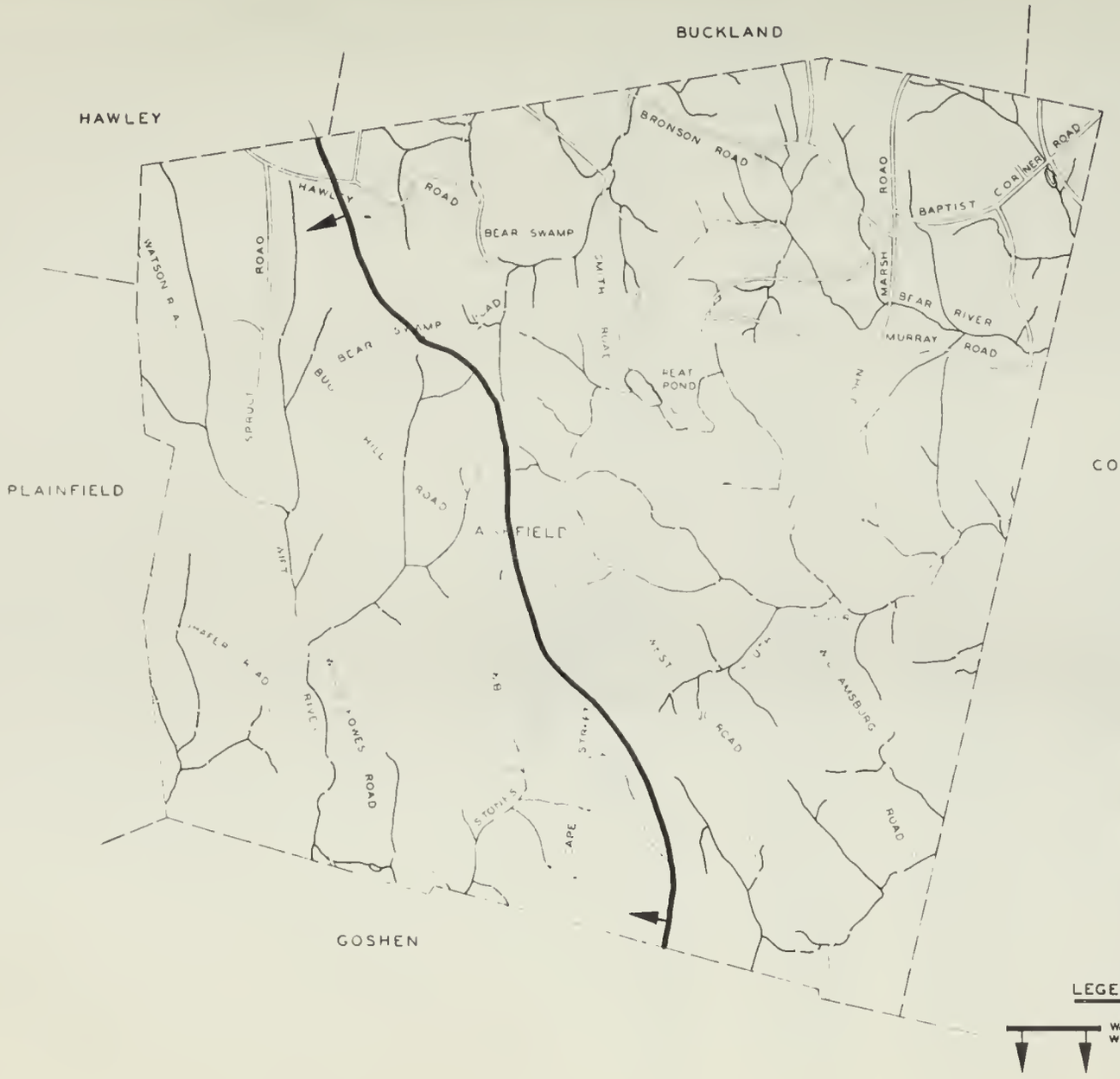
IN

AGAWAM (Cont'd.)

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
J	12" Iron	West Bank Westfield River	Raw Sewage	200' North of Suffield Street Bridge - Town Sewer
K	12" Iron	South Bank Westfield River (Submerged)	Raw Sewage	200' South of Suffield Street Bridge - Town Sewer
L	12" Iron	South Bank Westfield River	Raw Sewage	Foot of Reed Street - Town Sewer

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF AGAWAM

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Rag Paper	Wash Water, Bleach	881,300	24	Westfield River	90	Westfield River



LEGEND

WATERSHED LINE
WESTFIELD RIVER

WATERSHED MAP

TOWN OF

ASHFIELD

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS DEPT OF PUBLIC HEALTH

SCALE IN MILES

NOV 1939

NOTE: NO POLLUTION
NO INDUSTRIAL WASTES

BASE MAP DATA FURNISHED BY
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ASHFIELD

Area - 40.32 Sq. Mi. Area in Watershed - 15.88 Sq. Mi.

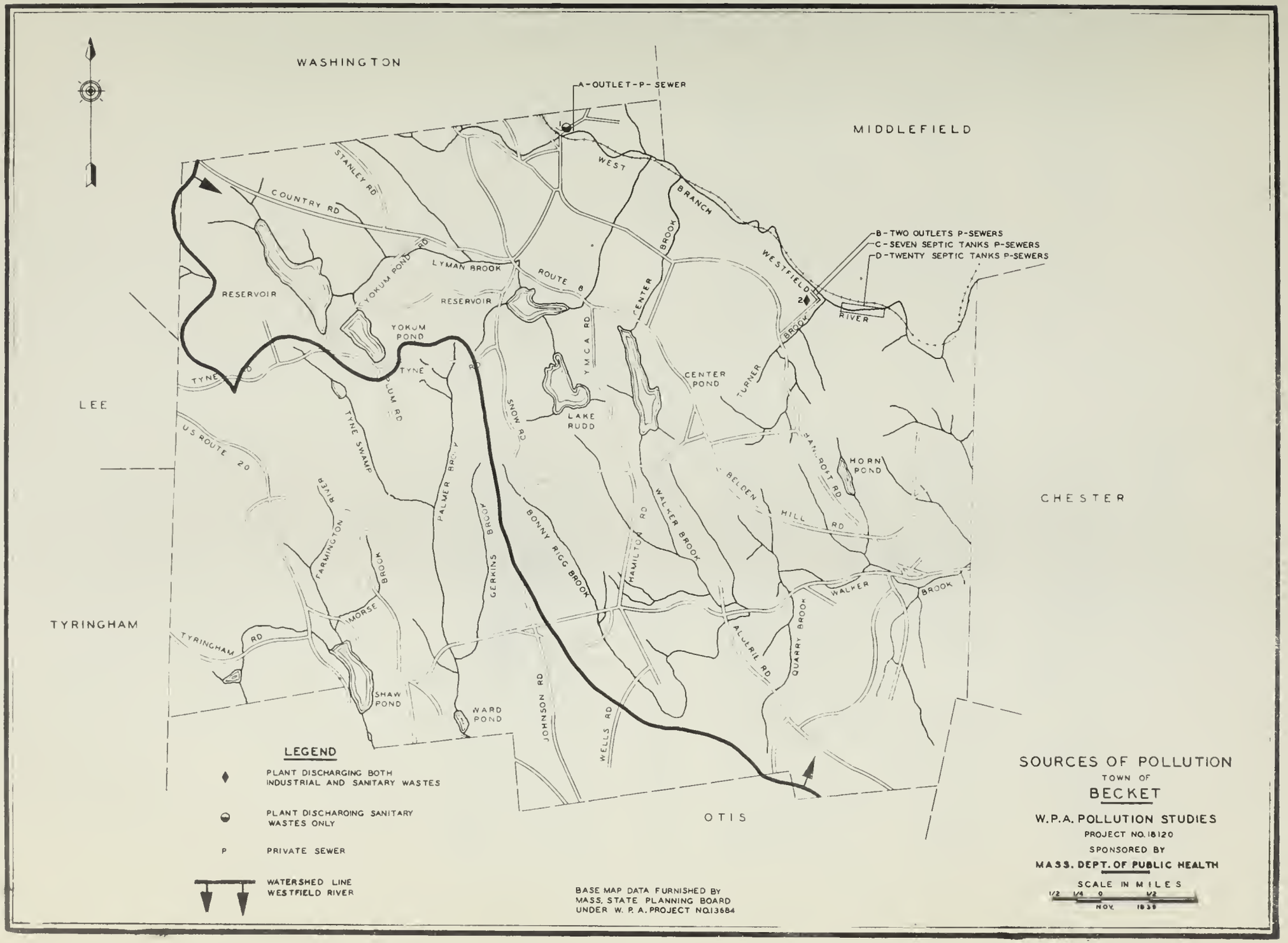
Population 1935 - 918 Est. Pop. in Watershed - 138

Ashfield, a rural and sparsely populated town located in southwestern Franklin County, is bounded on the north by Buckland, on the east by Conway, on the south by Goshen and Cummington, on the west by Plainfield, and on the northwest by Hawley.

The greater portion of Ashfield is drained by tributaries of the Deerfield River, only the western and south-central section of the town, comprising 39.3% of its total area, lying within the Westfield River Watershed. A large portion of this area is in forest cover.

A water supply maintained and operated by the Ashfield Water Company is obtained by gravity from Highland Spring Reservoir and, untreated, is distributed to 92 services, none of which are metered.

Sewage consists of sanitary wastes only, and is disposed of by means of privies, cesspools and septic tanks, which are widely located and distant from the streams of the area.


WASHINGTON
MIDDLEFIELD
CHESTER
LEE
TYRINGHAM
OTIS
A-OUTLET-P-SEWER
B-TWO OUTLETS P-SEWERS
C-SEVEN SEPTIC TANKS P-SEWERS
D-TWENTY SEPTIC TANKS P-SEWERS
STANLEY RD
COUNTRY RD
WEST BRANCH
WESTFIELD RIVER
RESERVOIR
YOKUM POND RD
LYMAN BROOK
ROUTE 8
CENTER BROOK
YMCA RD
YOKUM POND
TYNE RD
TYNE SWAMP
US ROUTE 20
SNOW RD
LAKE RUDD
CENTER POND
TURNER
HORN POND
BELDEN HILL RD
WALKER BROOK
PALMER BROOK
GERKINS BROOK
BONNY RIGG BROOK
HAMILTON RD
TYRINGHAM RD
SHAW POND
WARD POND
JOHNSON RD
WELLS RD
ALLERIL RD
QUARRY BROOK
WALKER BROOK
LEGEND
PLANT DISCHARGING BOTH INDUSTRIAL AND SANITARY WASTES
PLANT DISCHAROING SANITARY WASTES ONLY
P PRIVATE SEWER
WATERSHED LINE WESTFIELD RIVER
BASE MAP DATA FURNISHED BY MASS. STATE PLANNING BOARD UNDER W. P. A. PROJECT NO.13684
SOURCES OF POLLUTION
TOWN OF
BECKET
W.P.A. POLLUTION STUDIES
PROJECT NO. 18120
SPONSORED BY
MASS. DEPT. OF PUBLIC HEALTH
SCALE IN MILES
1/2 1/4 0 1/2
NOV. 1939

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BECKET

Area 48.04 Sq. Mi. Area in Watershed - 32.71 Sq. Mi.

Population 1935 - 723 Est. Pop. in Watershed - 633

The Town of Becket is located in the eastern section of Berkshire County, bordered by Washington and Middlefield on the north, Chester on the east, Blandford on the southeast, Otis on the south, and the towns of Tyringham, Lee, and Washington on the west.

Becket is sparsely populated and, for the most part, rural in character, approximately two-thirds of its area lying within the watershed of the Westfield River, the West Branch of the river forming a natural part of the town's northern boundary. The south central and southwestern section of the town lies within the Farmington River Watershed while the extreme western section forms part of the Housatonic River Basin.

Privately owned dug or driven wells provide the only means of water supply.

The usual rural means of sewage disposal prevails, namely, privies, cesspools and septic tanks, most of which are distant from the streams and constitute negligible sources of pollution. However, there are three private sewer outlets which discharge raw wastes directly into the West Branch of the Westfield River, including 774,000 gallons per day of industrial wastes. Furthermore, 27 septic tanks are so located that seepage to the river is more than probable.

WASTE OUTLETS

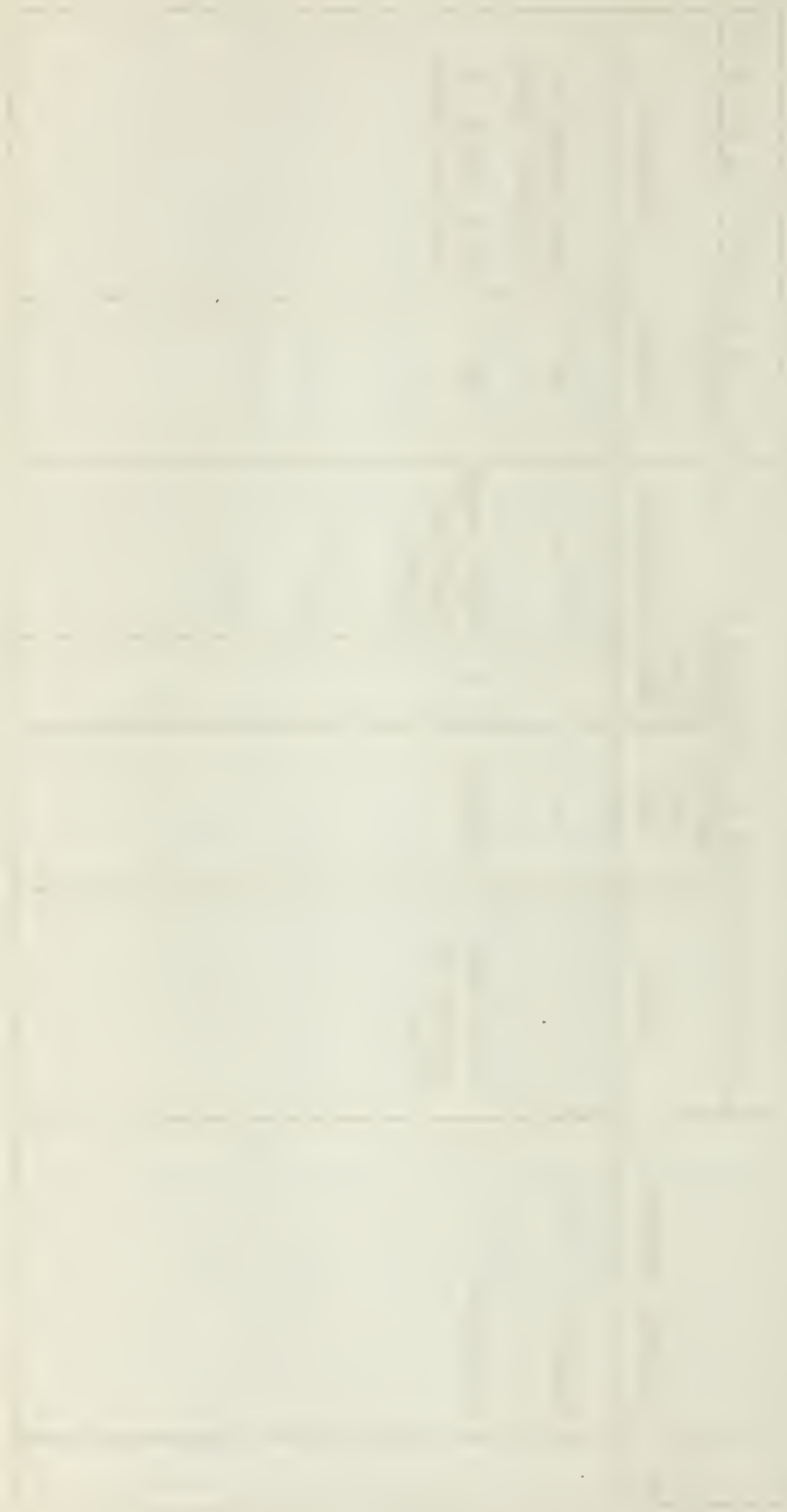
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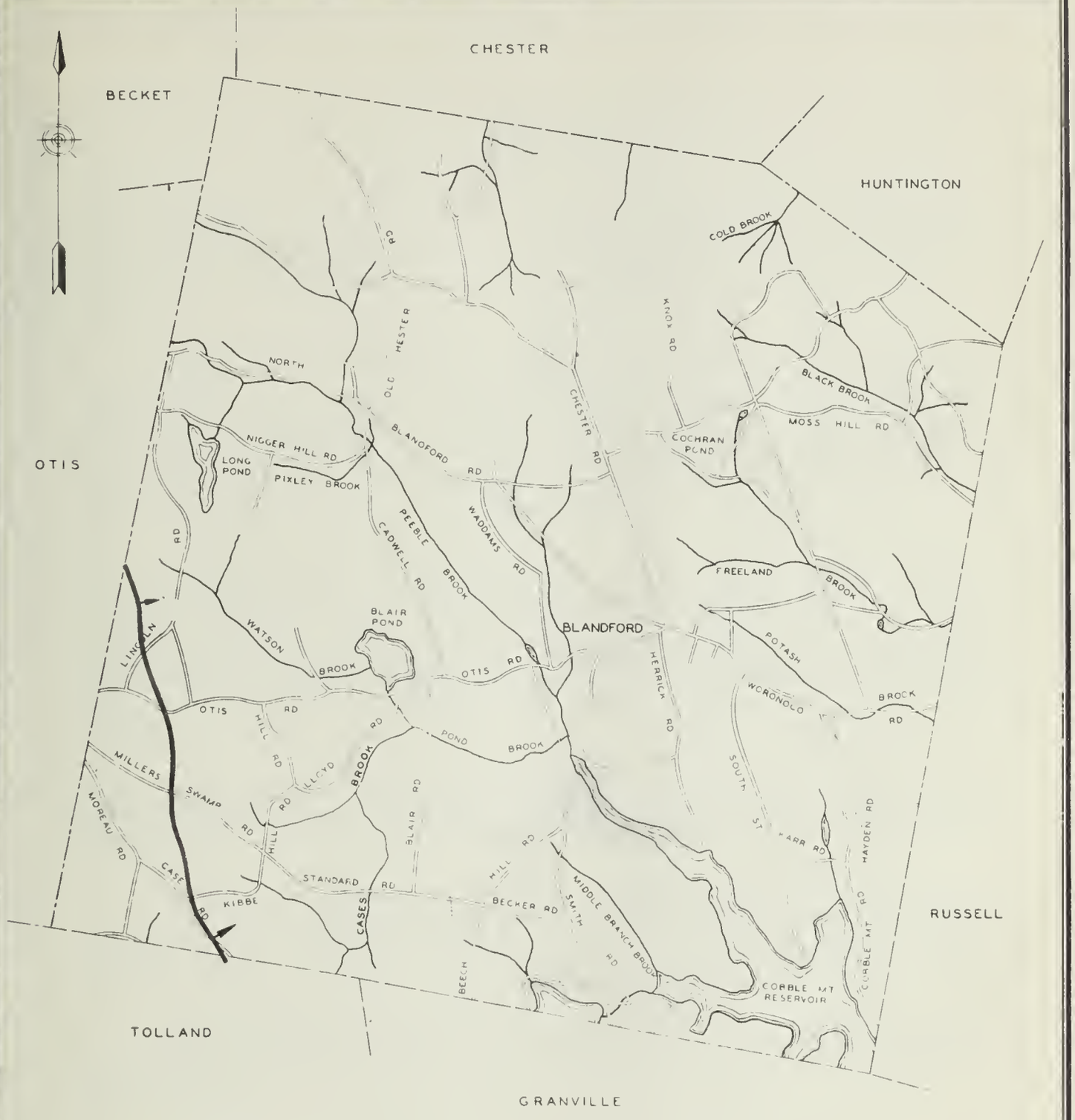
BECKET

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	Outlet	North Bank West Branch Westfield River	Sewage	From Mill near High Street
B	2 Outlets	South Bank West Branch Westfield River	Industrial & Sanitary	From Mill near Brook Street
C	7 Septic Tanks	South Bank West Branch Westfield River	Seepage	From Houses near Mill
D	20 Septic Tanks	North and South Bank, West Branch, Westfield River	Seepage	From Houses 1/4 mile East of Turner Brook

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF BECKET

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Baskets	-	-	8	-	20	West Branch of Westfield River
2	Cellulose	Wash Water Cellulose Fibre	774,000	8	West Branch Westfield River	40	West Branch of Westfield River





LEGEND

WATERSHED LINE
WESTFIELD RIVER

NOTE - NO POLLUTION
NO INDUSTRIAL WASTES

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W.P.A. PROJECT NO. 13684

WATERSHED MAP

TOWN OF

BLANDFORD

W.P.A. POLLUTION STUDIES

PROJECT NO 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2 1

NOV. 1938

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BLANDFORD

Area - 53.41 Sq. Mi. Area in Watershed - 50.29 Sq. Mi.

Population 1935 - 469 Est. Pop. in Watershed - 445

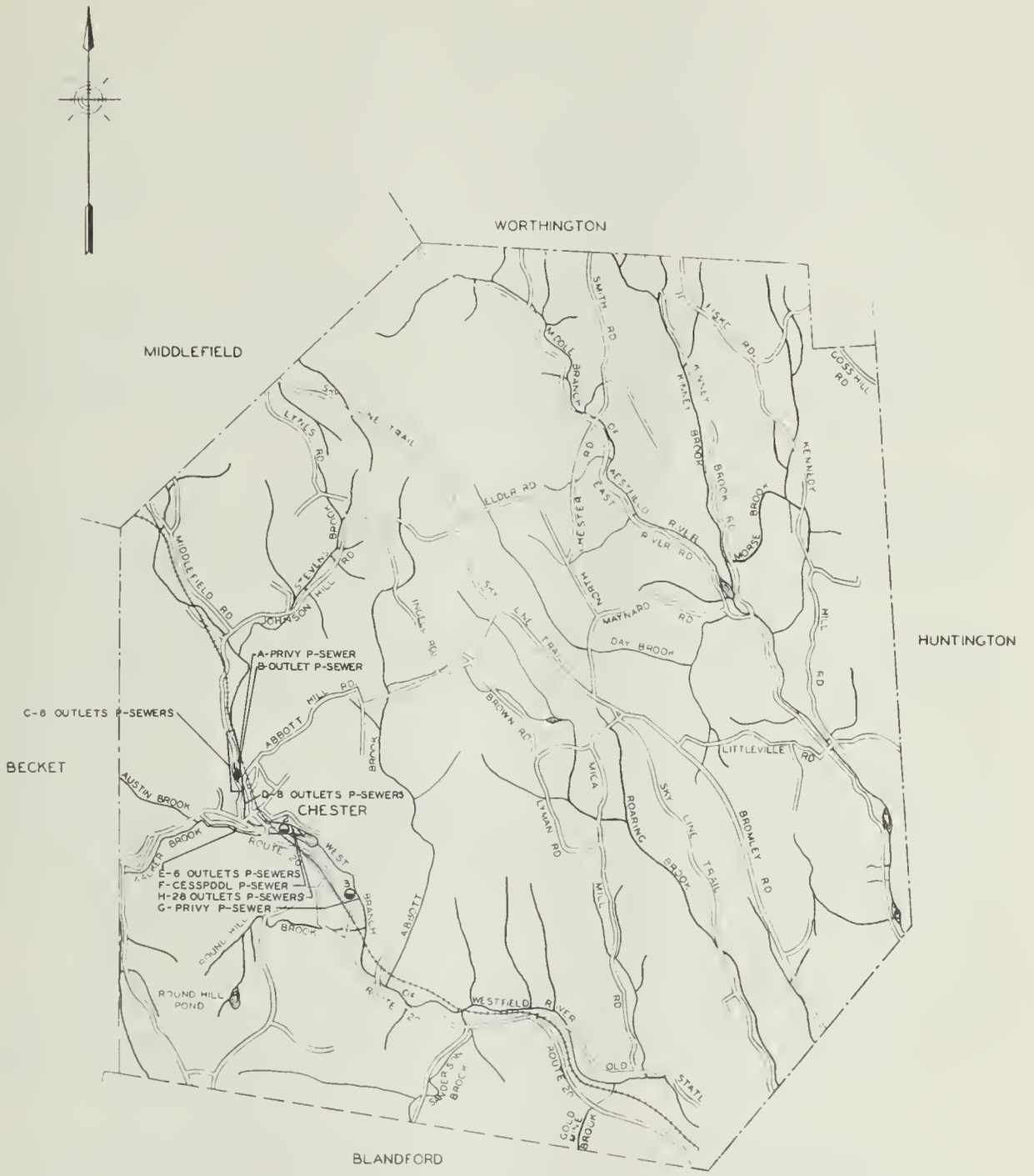
Blandford, a sparsely populated fruit-growing and dairy-farming community, and the largest town in point of area in the Westfield River Watershed, is situated in the western section of Hampden County, bordered on the north by Chester and Huntington, on the east by Russell, on the south by Granville and Tolland, and on the west by the towns of Otis and Becket.

The principal stream draining the area is Pebble Brook which rises in the Town at an elevation of approximately 1,560 feet above sea level. This stream, flowing in a general southeasterly direction and augmented by the flow of several minor streams to form Cobble Mountain Reservoir (a source of water supply for the City of Springfield) is a source tributary of the Westfield Little River.

Water supply for the Blandford Fire District is obtained from Freeland Brook reservoirs and, untreated, is pumped to 135 metered services.

Sewage, consisting entirely of domestic wastes, is disposed of by the usual rural means of privies, cesspools, and septic tanks, which, because of their widely scattered location and distance from the streams, constitute negligible sources of pollution.

Collection and removal of ground wastes in the area surrounding Cobble Mountain Reservoir is made regularly by the City of Springfield.



LEGEND

- ♦ PLANT DISCHARGING BOTH SANITARY AND INDUSTRIAL WASTES
- ◒ PLANT DISCHARGING SANITARY WASTES ONLY
- P PRIVATE SEWER

SOURCES OF POLLUTION

TOWN OF

CHESTER

W.P.A. POLLUTION STUDIES

PROJECT NO.18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

¼ ½ 0 ½ 1

NOV 1938

BASE MAP DATA FURNISHED BY MASS. STATE PLANNING BOARD UNDER W.P.A. PROJECT NO. 13684

NOTE: ENTIRE TOWN WITHIN WESTFIELD RIVER WATERSHED

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CHESTER

Area - 37.10 Sq. Mi. Area in Watershed - 37.10 Sq. Mi.

Population 1935 - 1,362 Est. Pop. in Watershed - 1,362

Chester, a picturesque and beautiful hilltown and site of a State Forest, is located in the extreme northwest section of Hampden County, bordered on the north by Worthington, on the east by Huntington, on the south by Blandford, on the west by Becket, and on the northwest by the Town of Middlefield.

The Town lies wholly within the Westfield River Watershed, both the West and Middle Branches of the river flowing through it in a general southeasterly direction, the former entering on the western and the latter on the northern border of the Town.

Water supply, which is distributed by a municipal system to 212 unmetered services, is obtained, untreated, by gravity from Austin Brook Reservoir and Horn Pond.

There are a total of 52 private outlets discharging to the West Branch of the Westfield River and Walker Brook in a relatively small area in the southwestern section of the town. In its Special Report, House Document #2050, the Massachusetts Department of Public Health recommends that the Town give consideration to the removal of these outlets, and the treatment of its sewage.

One of the more important industrial activities in the town is the mining and grinding of emery, this industry discharging 18,000 gallons daily of industrial wastes in the form of wash water directly into the West Branch of the river.

A recent survey discloses that the eastern section of town, drained by the Middle Branch of the river and tributaries, is steadily declining in population, many farms and even town roads being abandoned; and that pollution contributed to this branch of the river is negligible.

WASTE OUTLETS

IN

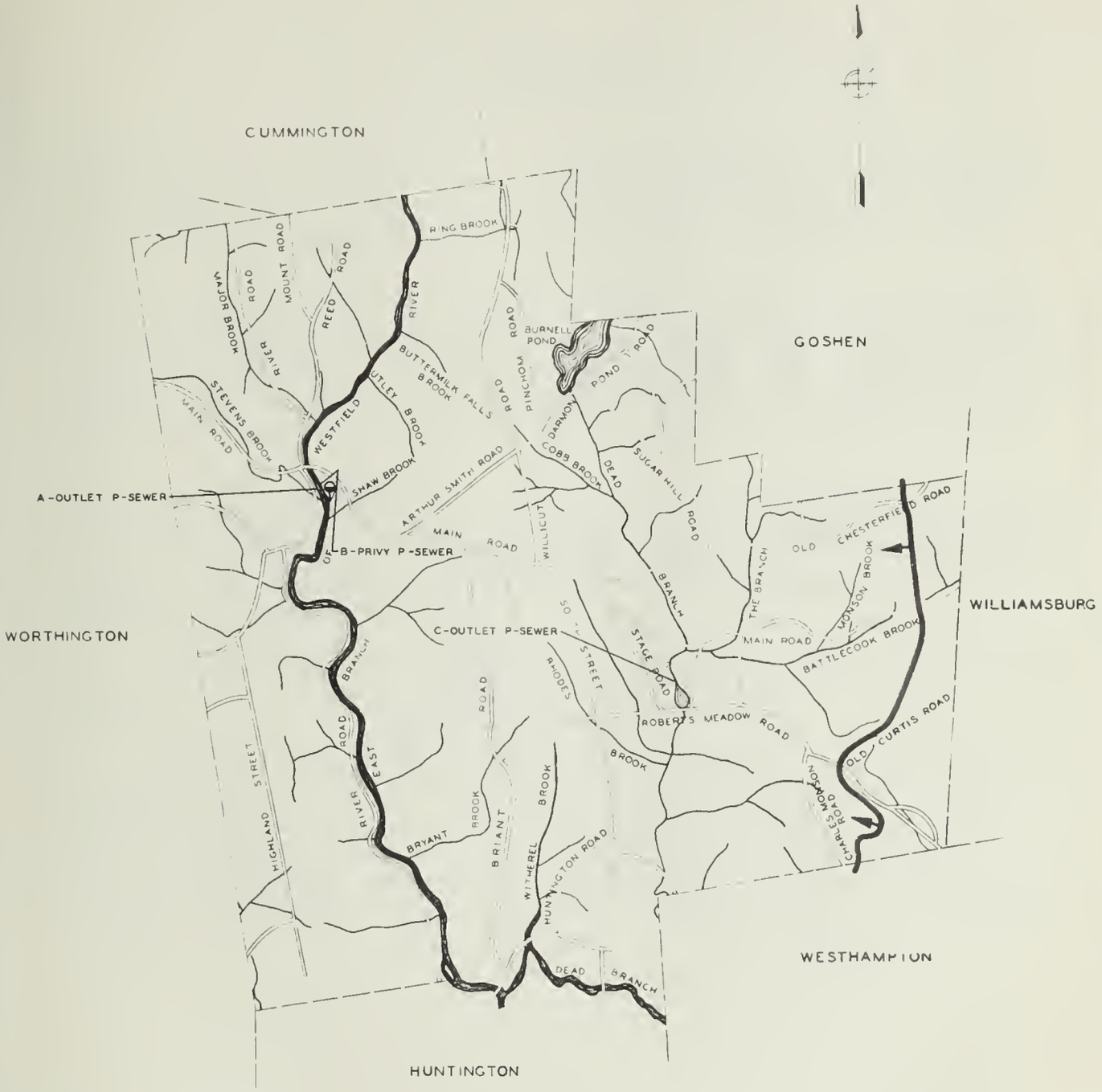
CHESTER

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	Privy	West Bank of West Branch Westfield River	Seepage	From Mill #1 near Johnson Hill Road
B	Outlet	West Bank of West Branch Westfield River	Industrial	From Mill #1 near Johnson Hill Road
C	6 Outlets	West Bank of West Branch Westfield River	Sewage	From Houses near Johnson Hill Road
D	8 Outlets	East Bank of West Branch Westfield River	Sewage	From Houses near Abbot Hill Road
E	6 Outlets	North Bank of Walker Brook	Sewage	From Houses near River Street
F	Cesspool	South Bank of West Branch Westfield River	Seepage	From Mill near State Road
G	Privy	West Bank of West Branch Westfield River	Seepage	From Mill #3 near Route 20
H	28 Outlets	West Bank of West Branch Westfield River	Sewage	From Area near Mill #2

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF CHESTER

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Ground Emery	Wash Water	18,000	8	West Branch Westfield River	25	West Branch Westfield River
2	Tombstones	-	-	8	-	25	West Branch Westfield River
3	Grinding Wheels	-	-	8	-	50	West Branch Westfield River





LEGEND

- PLANT DISCHARGING SANITARY WASTES ONLY
- P — PRIVATE SEWER
- WATERSHED LINE WESTFIELD RIVER

SOURCES OF POLLUTION

TOWN OF

CHESTERFIELD

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/8 1/4 0 1/2 1

NOV. 1939.

BASE MAP DATA FURNISHED BY MASS. STATE PLANNING BOARD UNDER W.P.A. PROJECT NO. 13684

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CHESTERFIELD

Area - 31.34 Sq. Mi. Area in Watershed - 29.48 Sq. Mi.

Population 1935 - 445 Est. Pop. in Watershed - 420

The rural, sparsely populated Town of Chesterfield is located in western Hampshire County, bordered on the north by Cummington, on the northeast by Goshen, on the east by Williamsburg, on the south by Westhampton and Huntington, and on the west by Worthington.

With the exception of a small portion of the Town's eastern section, which forms a part of the main Connecticut River Watershed, Chesterfield lies within the Watershed of the Westfield River, the Westfield River itself flowing through the Town in a general southerly direction.

Water supply is obtained from privately owned dug or driven wells.

Sewage is disposed of by the usual means prevailing in rural communities: privies, cesspools and septic tanks, which, with the exception of one privy located on the bank of the river, are some distance from the streams and constitute negligible sources of pollution. There are, however, 2 private sewer outlets which discharge raw sanitary wastes directly to the river or tributary stream.

WASTE OUTLETS

IN

CHESTERFIELD

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	Outlet	West Bank Westfield River	Sewage	From Houses near River Road
B	Privy	East Bank Westfield River	Seepage	From Mill near Main Road
C	Outlet	West Bank Dead Branch Brook	Sewage	From Houses near State Road

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF CHESTERFIELD

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Wooden Handles	- -	-	8	-	15	Westfield River



WATERSHED MAP

TOWN OF

CUMMINGTON

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS DEPT OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2

NOV 1938

NOTE - NO POLLUTION
NO INDUSTRIAL WASTE

NOTE - ENTIRE TOWN WITHIN
WESTFIELD RIVER WATERSHED

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W. P. A. PROJECT NO. 13684

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CUMMINGTON

Area - 23.18 Sq. Mi. Area in Watershed - 23.18 Sq. Mi.

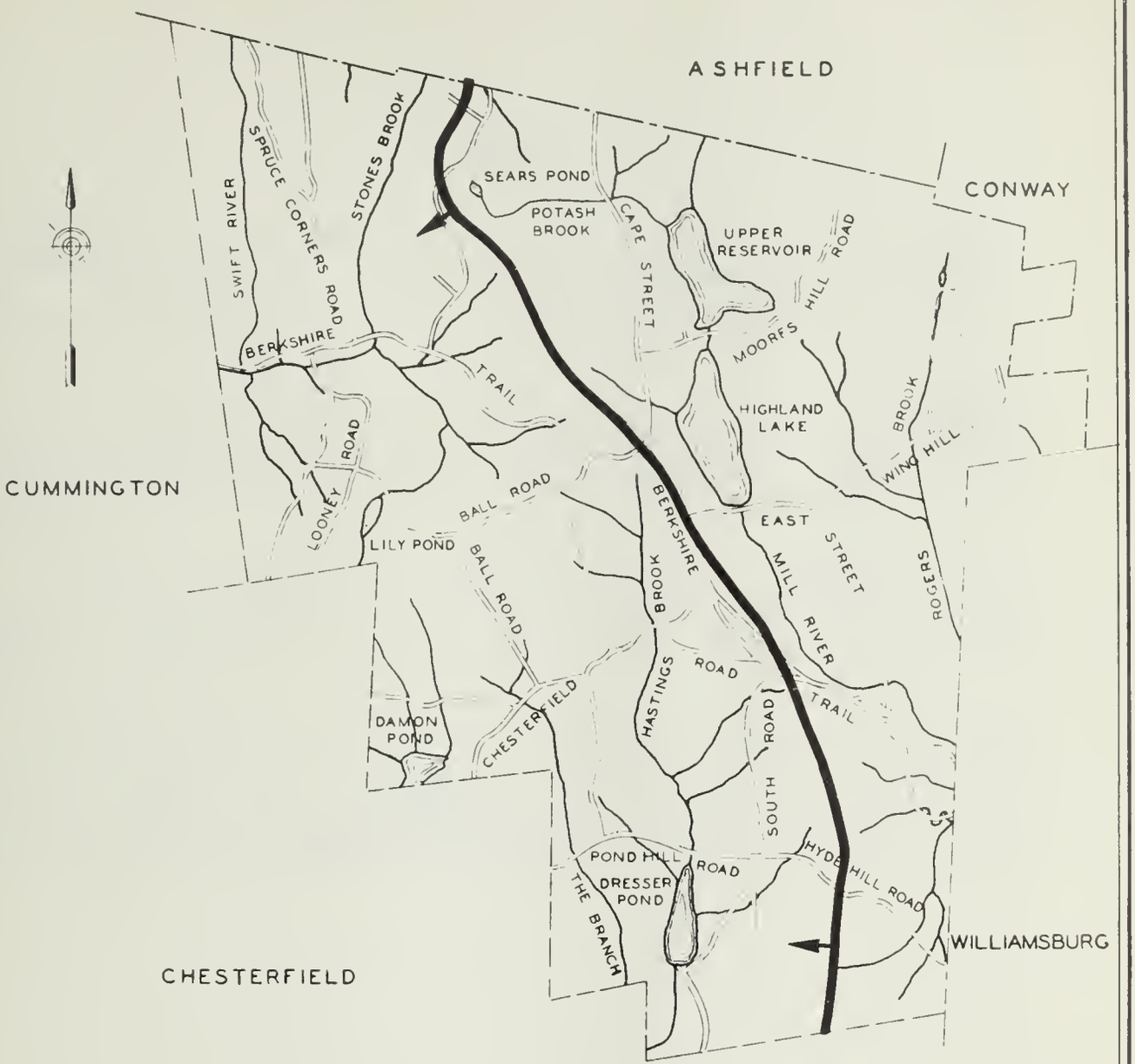
Population 1935 - 610 Est. Pop. in Watershed - 610

The Town of Cummington is situated in the northwestern section of Hampshire County. It is bounded on the north by Plainfield, on the northeast by Ashfield, on the east by Goshen, on the southeast by Chesterfield, on the south by Worthington, and on the west by Peru and Windsor.

Drainage of the area is effected by the main stream of the Westfield River and several minor tributaries, the river flowing through the Town in a general southeasterly direction.

The municipal water supply is obtained from a large spring and, untreated, is distributed by gravity.

Cummington is sparsely populated and rural in character and, as is usual in most townships of this type, the only sewage disposal means are privies, septic tanks, and cesspools, which, because of their widely scattered location and distance from the streams, contribute little, if any, pollution.



WATERSHED MAP

TOWN OF

GOSHEN

W.P.A. POLLUTION STUDIES

PROJECT NO 18120

SPONSORED BY

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LEGEND

WATERSHED LINE
WESTFIELD RIVER

NOTE :- NO POLLUTION
NO INDUSTRIAL WASTES

BASE MAP FURNISHED BY
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SCALE IN MILES

1/2 1/4 0 1/2

NOV. 1939

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GOSHEN

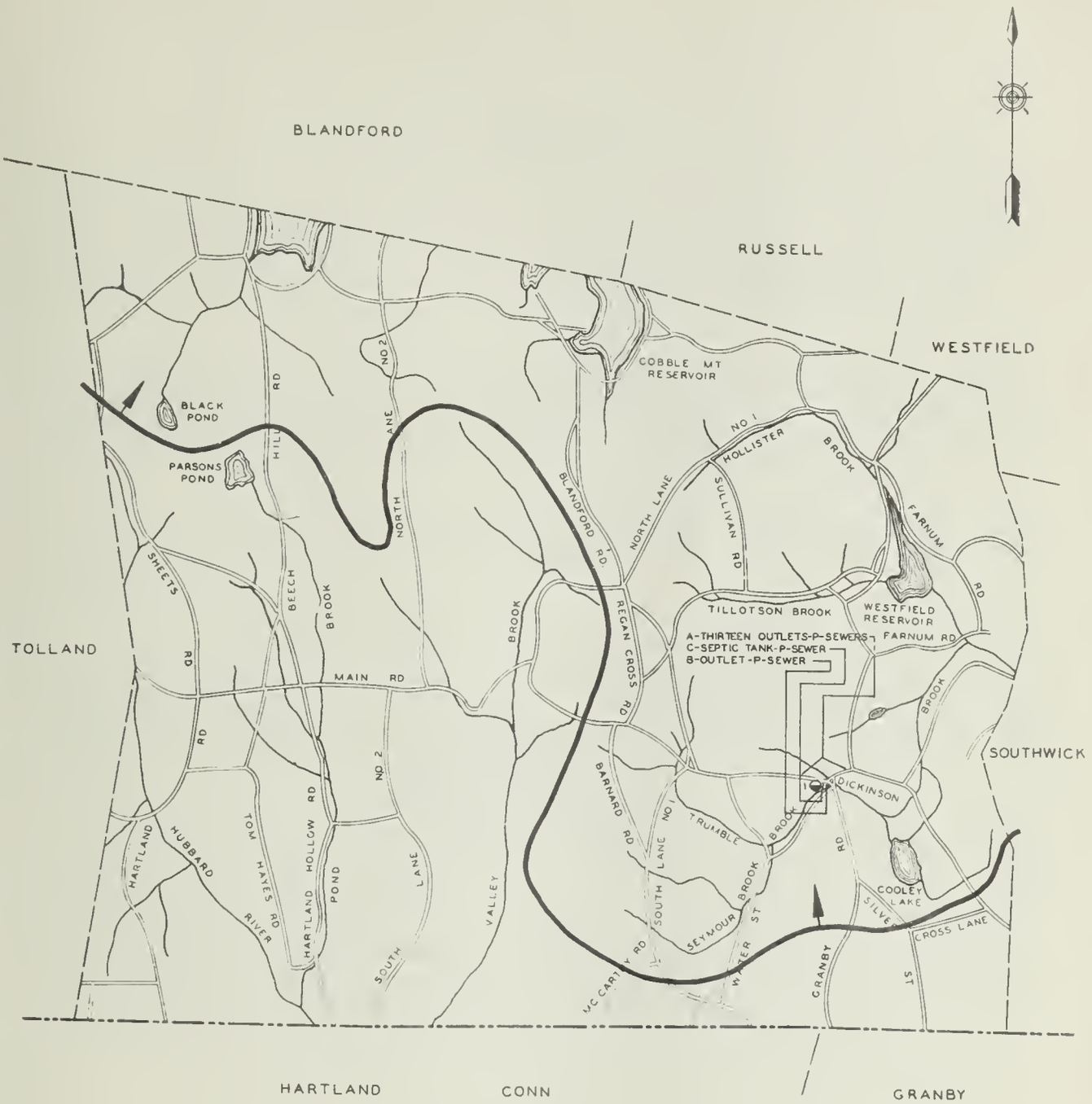
Area - 17.71 Sq. Mi. Area in Watershed - 10.92 Sq. Mi.

Population 1935 - 257 Est. Pop. in Watershed - 232

The Town of Goshen is located in northwestern Hampshire County, bordered on the north by Ashfield, on the east by Conway and Williamsburg, on the south by Chesterfield, and on the west by Cummington.

Goshen is predominantly rural in character, sparsely populated, and with a large portion of its area in forest cover. Approximately 61% of the Town's total area lies within the Westfield River Watershed.

Water supply is obtained from privately owned dug or driven wells, while sewage is disposed of by the usual rural means of privies, cesspools and septic tanks, which are widely located and constitute negligible sources of pollution to the Westfield River or its tributaries.



LEGEND

- PLANT DISCHARGING SANITARY WASTES ONLY
- WATERSHED LINE WESTFIELD RIVER
- P PRIVATE SEWER

SOURCES OF POLLUTION

TOWN OF

GRANVILLE

W.P.A. POLLUTION STUDIES

PROJECT NO 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2 1

NOV 1935

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GRANVILLE

Area - 43.28 Sq. Mi. Area in Watershed - 33.02 Sq. Mi.

Population 1935 - 704 Est. Pop. in Watershed - 493

Granville, a rural and sparsely populated township of southwestern Hampden County, is bounded by Blandford and Russel on the north, Westfield on the northeast, Southwick on the east, the State of Connecticut on the south, and Tolland on the west.

More than half the area of Granville lies within the Westfield River Watershed, the balance forming part of the Farmington River Basin.

The Granville Centre Water Company provides a water supply for a portion of the Town. This supply, distributed by gravity to 20 metered services, is obtained, untreated, from springs and a dug well. Water for residents of the outlying sections of the Town is obtained from privately owned dug or driven wells.

For the most part, sewage is disposed of by the usual rural means of privies, cesspools and septic tanks, which are so widely located as to contribute little, if any, pollution to the streams of the area. However, in the center of the Town fourteen private sewer outlets discharge directly to Dickinson and Trumble Brooks. In addition, there is a septic tank located on the north bank of Trumble Brook from which seepage is more than probable.

WASTE OUTLETS

IN

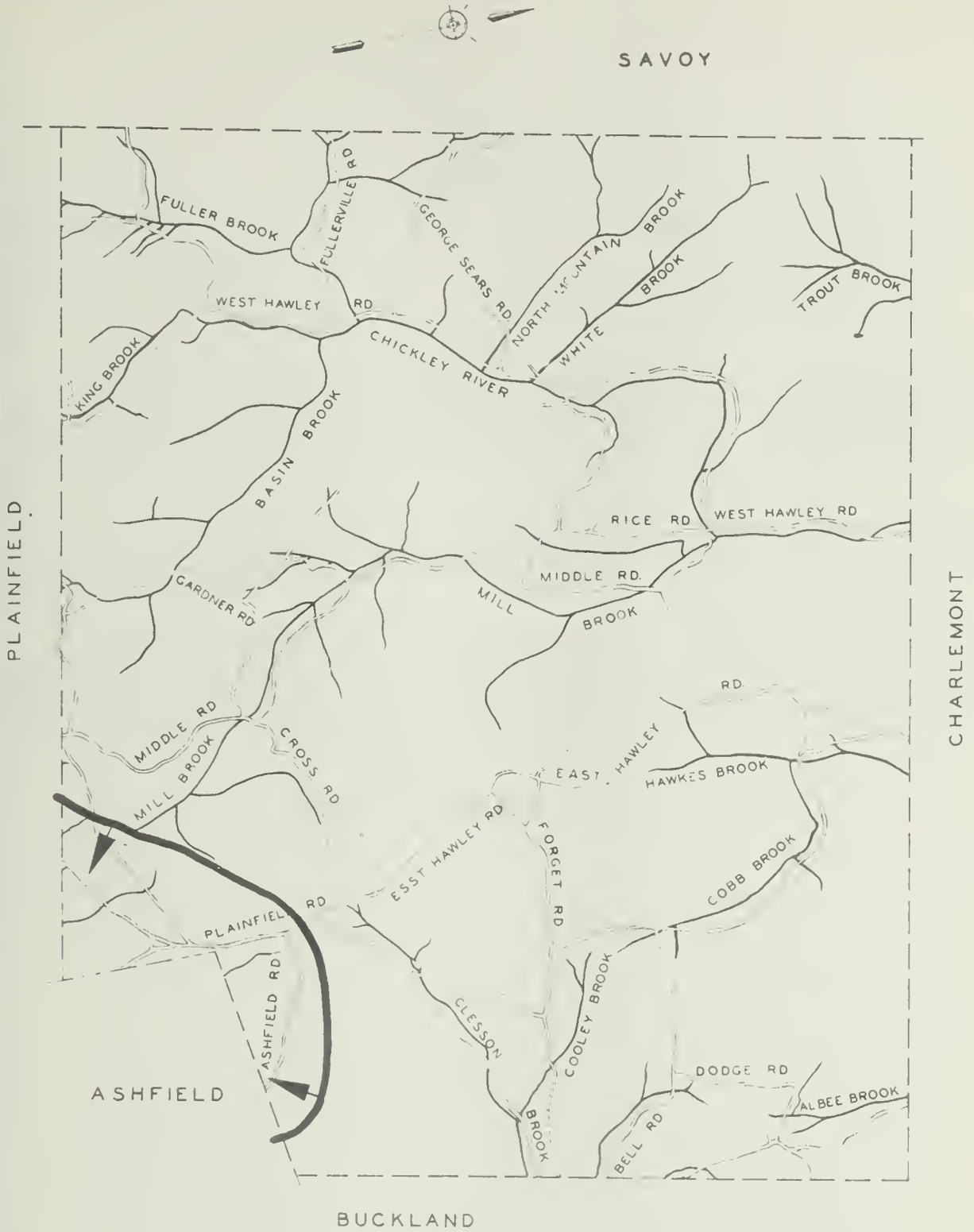
GRANVILLE

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	13 Outlets	East and West Bank of Dickinson Brook	Sewage	Houses along main road in center of town
B	Outlet	North Bank Trumble Brook	Sewage	From Mill near Junction Trumble and Dickinson Brooks
C	Septic Tank	North Bank Trumble Brook	Seepage	From House near Junction Trumble and Dickinson Brooks

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF GRANVILLE

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Drums	-	--	3	--	25	Trumble Brook





WATERSHED MAP

TOWN OF

HAWLEY

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

LEGEND

WATERSHED LINE

WESTFIELD RIVER

NOTE. NO POLLUTION
NO INDUSTRIAL WASTE

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W.P.A. PROJECT NO. 13654

SCALE IN MILES

1/2 1/4 0 1/2

NOV. 1936

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HAWLEY

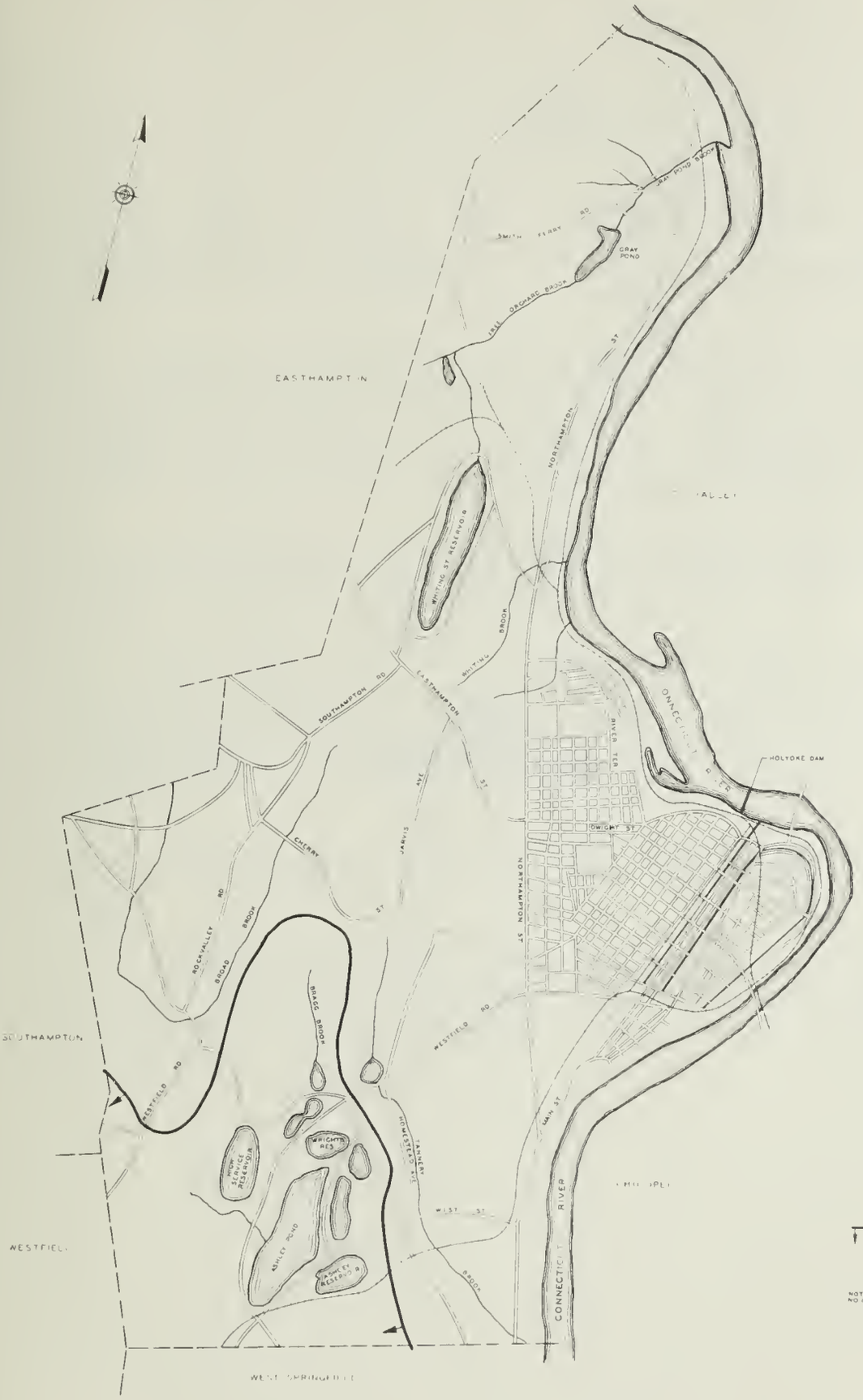
Area - 31.02 Sq. Mi. Area in Watershed - 1.89 Sq. Mi.

Population 1935 - 308 Est. Pop. in Watershed - 18

Hawley, a sparsely populated rural town of southwestern Franklin County, is bounded on the north by Charlemont, on the east by Buckland, on the southeast by Ashfield, on the south by Plainfield, and on the west by Savoy.

Water supply is obtained from privately owned dug or driven wells, while sewage is disposed of by means of cesspools, privies, and septic tanks.

Only the extreme southeastern section of Hawley, comprising 6% of the total area of the Town lies within the Westfield River Watershed, this small area having little bearing on the general pollution situation covered by this report.



MASSACHUSETTS
PROJECT No 18120

POLLUTION STUDIES
CITY OF
HOLYOKE

SPONSORED BY
MASSACHUSETTS DEPT OF PUBLIC HEALTH
SCALE IN MILES
1/4 0 1/2 1

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HOLYOKE

Area - 22.86 Sq. Mi. Area in Watershed - 3.92 Sq. Mi.

Population 1935 - 56,139 Est. Pop. in Watershed - 500

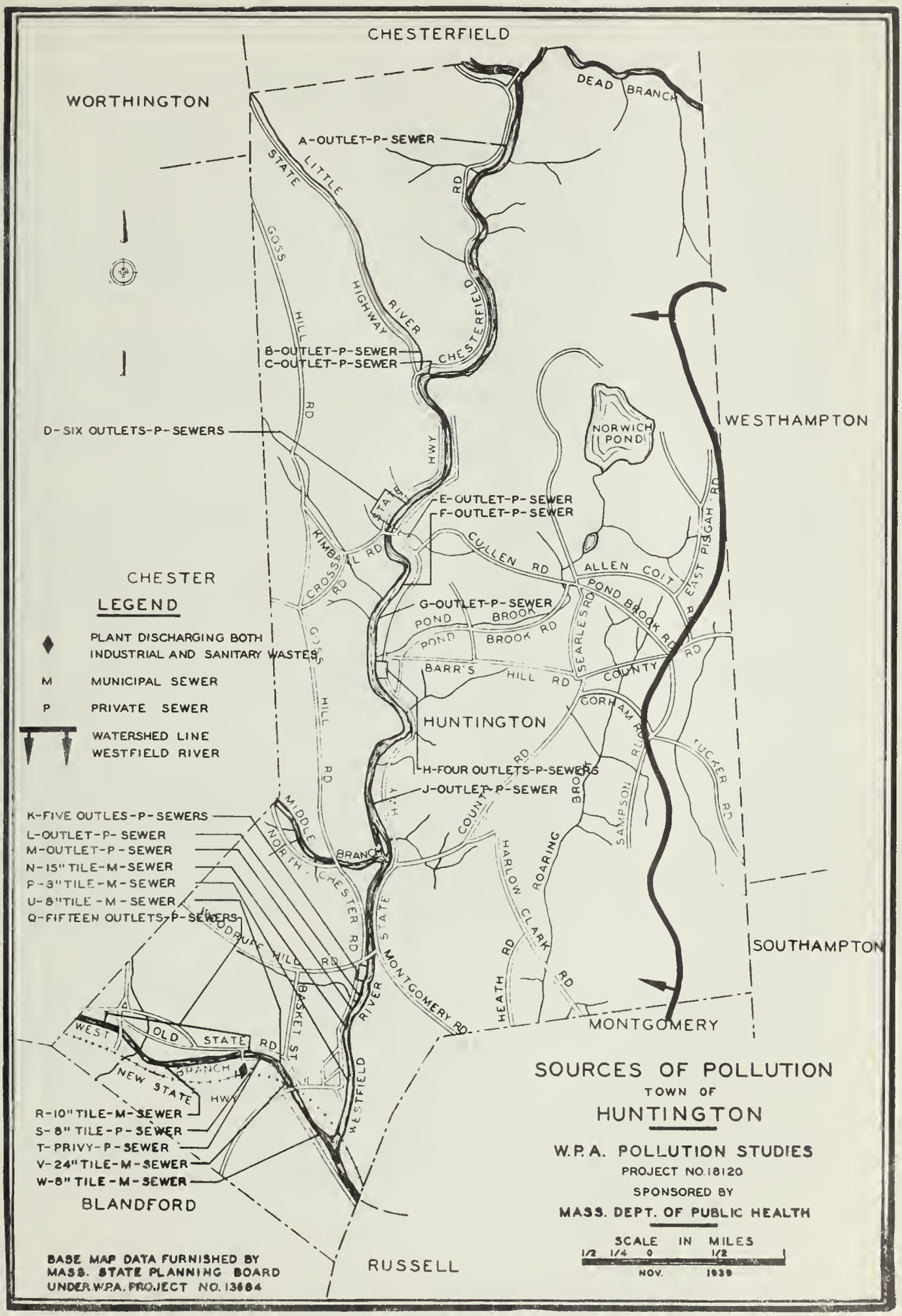
Holyoke, popularly known as "The Paper City" and situated in the north central section of Hampden County, is bounded on the northwest and north by Easthampton; on the east by South Hadley, Chicopee and the Connecticut River; on the south by West Springfield, and on the west by Westfield and Southampton.

Ashley Ponds, a water supply reservoir is the principal drainage to the Westfield River, the larger portion of the City lying within the main Connecticut River Watershed.

The water supply for Holyoke is obtained from mountain streams, natural ponds and artificial reservoirs, which by gravity flow through 96.5 miles of water mains, serve 6,184 service taps (approximately 7,512,000 gallons per day) only 8% of which are metered.

A municipal sewerage system serves the greater part of the City and discharges its raw sewage directly into the Connecticut River.

Pollution from this part of Holyoke to the Westfield River Valley is of little consequence as there is little habitation and no industries are located in the area. (See Connecticut River Report)


CHESTERFIELD
WORTHINGTON
WESTHAMPTON
CHESTER
HUNTINGTON
SOUTHAMPTON
MONTGOMERY
BLANDFORD
RUSSELL
DEAD BRANCH
A-OUTLET-P-SEWER
STATE
LITTLE
RD
GOSS
HILL
RD
HIGHWAY
RIVER
CHESTERFIELD
B-OUTLET-P-SEWER
C-OUTLET-P-SEWER
D-SIX OUTLETS-P-SEWERS
NORWICH POND
E-OUTLET-P-SEWER
F-OUTLET-P-SEWER
KIMBALL RD
CROSS RD
CULLEN RD
ALLEN COIT
EAST PISGAH RD
POND BROOK RD
G-OUTLET-P-SEWER
POND BROOK
SEARLES RD
BARR'S HILL RD
COUNTY
GORHAM RD
TUCKER RD
H-FOUR OUTLETS-P-SEWERS
J-OUTLET-P-SEWER
K-FIVE OUTLES-P-SEWERS
L-OUTLET-P-SEWER
M-OUTLET-P-SEWER
N-15" TILE-M-SEWER
P-3" TILE-M-SEWER
U-8" TILE-M-SEWER
Q-FIFTEEN OUTLETS-P-SEWERS
MIDDLE BRANCH
NORTH
CHESTER RD
COUNTY RD
BROOK
SAMPSON RD
ROARING
HARLOW CLARK RD
HEATH RD
MONTGOMERY RD
STATE
RIVER
WESTFIELD
BASKET ST
OLD STATE RD
WEST BRANCH
NEW STATE HWY
R-10" TILE-M-SEWER
S-8" TILE-P-SEWER
T-PRIVY-P-SEWER
V-24" TILE-M-SEWER
W-8" TILE-M-SEWER
LEGEND
PLANT DISCHARGING BOTH INDUSTRIAL AND SANITARY WASTES
M MUNICIPAL SEWER
P PRIVATE SEWER
WATERSHED LINE WESTFIELD RIVER
SOURCES OF POLLUTION
TOWN OF
HUNTINGTON
W.P.A. POLLUTION STUDIES
PROJECT NO. 18120
SPONSORED BY
MASS. DEPT. OF PUBLIC HEALTH
SCALE IN MILES
1/2 1/4 0 1/2
NOV. 1938
BASE MAP DATA FURNISHED BY MASS. STATE PLANNING BOARD UNDER W.P.A. PROJECT NO. 13664

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HUNTINGTON

Area - 26.84 Sq. Mi. Area in Watershed - 25.05 Sq. Mi.

Population 1935 - 1,345 Est. Pop. in Watershed - 1,345

The Town of Huntington is situated in the southwestern section of Hampshire County, bordered on the north by Chesterfield, on the east by Westhampton and Southampton, on the south by Montgomery, Russell and Blandford, and on the west by Chester and Worthington.

With the exception of a small portion of the extreme eastern section, the entire area of the Town lies within the Westfield River Watershed. The main Westfield River enters Huntington from the north and, flowing in a winding but general southerly course, is joined by the Middle Branch and West Branch in the west central and extreme southern sections of the town, respectively.

Water supply for the Huntington Fire District is obtained from Cold Brook Reservoir and, untreated, is distributed to 234 unmetered services.

A sewerage system, owned and operated by the Huntington Fire District, discharges raw sewage to the Westfield River and West Branch by a series of outlets. In addition, there are 41 private outlets discharging directly to the Westfield and its tributaries. All of these outlets are so-called bank outlets, which create an unsightly and unsanitary condition in their immediate vicinity as well as contributing to the general pollution problem of the Westfield River.

Further pollution is created by the daily discharge of 40,000 gallons of soap, soda and wash water to the West Branch of the Westfield River by a textile mill employing 150 workers. The sanitary wastes of this mill also discharge directly into the West Branch of the Westfield River.

In its Special Report, House Document #2050, the Massachusetts Department of Public Health recommends that the Town give consideration to the removal and treatment of its sewage.

WASTE OUTLETS

IN

HUNTINGTON

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	Outlet	West Bank Westfield River	Sewage	Near Chesterfield Road
B	Outlet	West Bank Westfield River	Sewage	Near State Highway
C	Outlet	West Bank Westfield River	Sewage	Junct. Chesterfield Road and State Highway
D	6 Outlets	West Bank Westfield River	Sewage	Area North of Junct. Kimball Road - State Highway
E	Outlet	South Bank Unnamed Brook #1	Sewage	Near Kimball Road Bridge
F	Outlet	East Bank Westfield River	Sewage	Near State Highway South Kimball Bridge
G	Outlet	East Bank Westfield River	Sewage	North of Pond Brook
H	4 Outlets	East Bank Westfield River	Sewage	Area West of State Highway South of Barr Hill Road
J	Outlet	East Bank Westfield River	Sewage	State Highway North of County Road

WASTE OUTLETS

IN

HUNTINGTON (Cont'd.)

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
K	5 Outlets	West Bank Westfield River	Sewage	Area along River South of Woodruff Hill Road
L	Outlet	West Bank Westfield River	Sewage	300' South of Woodruff Hill Road
M	Outlet	West Bank Westfield River	Sewage	600' South of Woodruff Hill Road
*N	15" Tile	West Bank Westfield River	Raw Sewage	1000' South of Woodruff Hill Road - Town Sewer
P	8" Tile	West Bank Westfield River	Raw Sewage	Near South end, North Chester Road - Town Sewer
Q	15 Outlets	North Bank West Branch Westfield River	Sewage	In Area Western Part of Town Along Old State Road
R	10" Tile	South Bank West Branch Westfield River	Raw Sewage	North of new State Highway - Town Sewer
S	8" Tile	South Bank West Branch Westfield River	Sewage	From Mill North of New State Highway

WASTE OUTLETS

IN

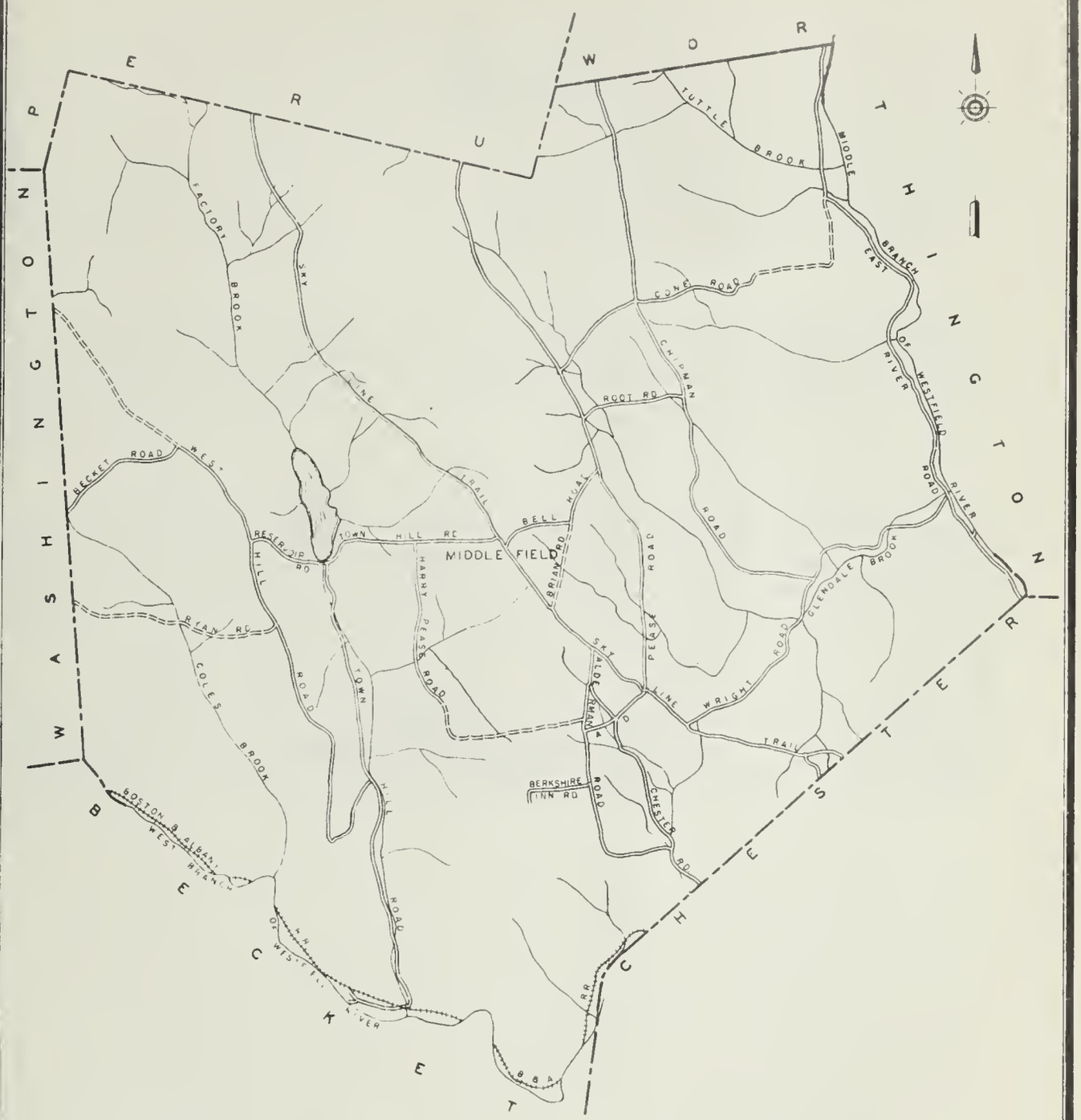
HUNTINGTON (Cont'd.)

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
T	Privy	South Bank West Branch Westfield River	Sewage	From Mill North of New State Highway
U	8" Tile	North Bank West Branch Westfield River	Raw Sewage	Junct. Old State Road and Basket Street - Town Sewer
*V	24" Tile	South Bank West Branch Westfield River	Raw Sewage	Junct. Old and New State Highway - Town Sewer
W	8" Tile	West Bank West Branch Westfield River	Raw Sewage	Old State Highway - Town Sewer

* Recorded Subsequent to House Document #2050

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF HUNTINGTON

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Mens Worsted Suitings	Soap, Soda, Wash Water	40,000	16	West Branch Westfield River	150	West Branch of Westfield River



WATERSHED MAP

TOWN OF

MIDDLEFIELD

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2

NOV. 1939

NOTE - NO POLLUTION
NO INDUSTRIAL WASTE

NOTE - ENTIRE TOWN WITHIN WESTFIELD RIVER WATERSHED

BASE MAP PREPARED BY
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UNDER W.P.A. PROJECT NO. 13664

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MIDDLEFIELD

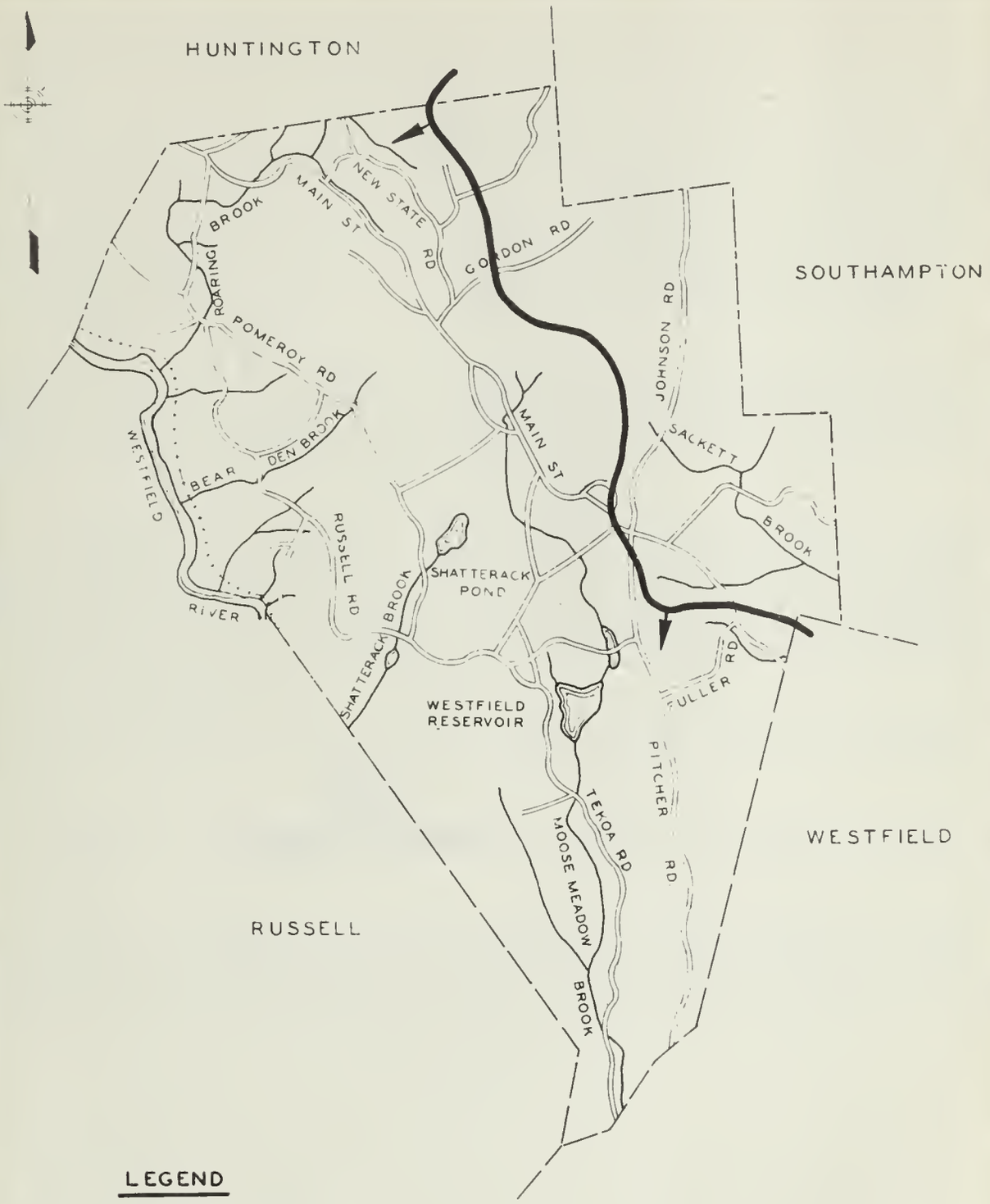
Area - 24.25 Sq. Mi. Area in Watershed - 24.25 Sq. Mi.

Population 1935 - 220 Est. Pop. in Watershed - 220

The Town of Middlefield is located in the extreme southwestern section of Hampshire County, bordered on the north by Peru and Worthington, on the east by Worthington, on the southeast by Chester, on the southwest by Becket, and on the west by the Town of Washington.

Sparsely populated and with a large portion of its area in forest cover, Middlefield lies entirely within the Westfield River Watershed, the Middle Branch of the River forming part of the Town's boundary with Worthington, and the West Branch forming a greater part of the Middlefield-Becket boundary on the southwest.

Privately owned dug or driven wells provide the only means of water supply, while sewage, consisting of domestic wastes only, is disposed of by the usual rural means of privies, septic tanks and cesspools, which contribute little, if any, pollution to the Westfield River or its tributaries.



LEGEND

WATERSHED LINE
WESTFIELD RIVER

WATERSHED MAP

TOWN OF

MONTGOMERY

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2 1

NOV. 1939

NOTE– NO POLLUTION
NO INDUSTRIAL WASTE

BASE MAP DATA FURNISHED BY
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MONTGOMERY

Area - 15.13 Sq. Mi. Area in Watershed - 11.83 Sq. Mi.

Population 1935 - 174 Est. Pop. in Watershed - 139

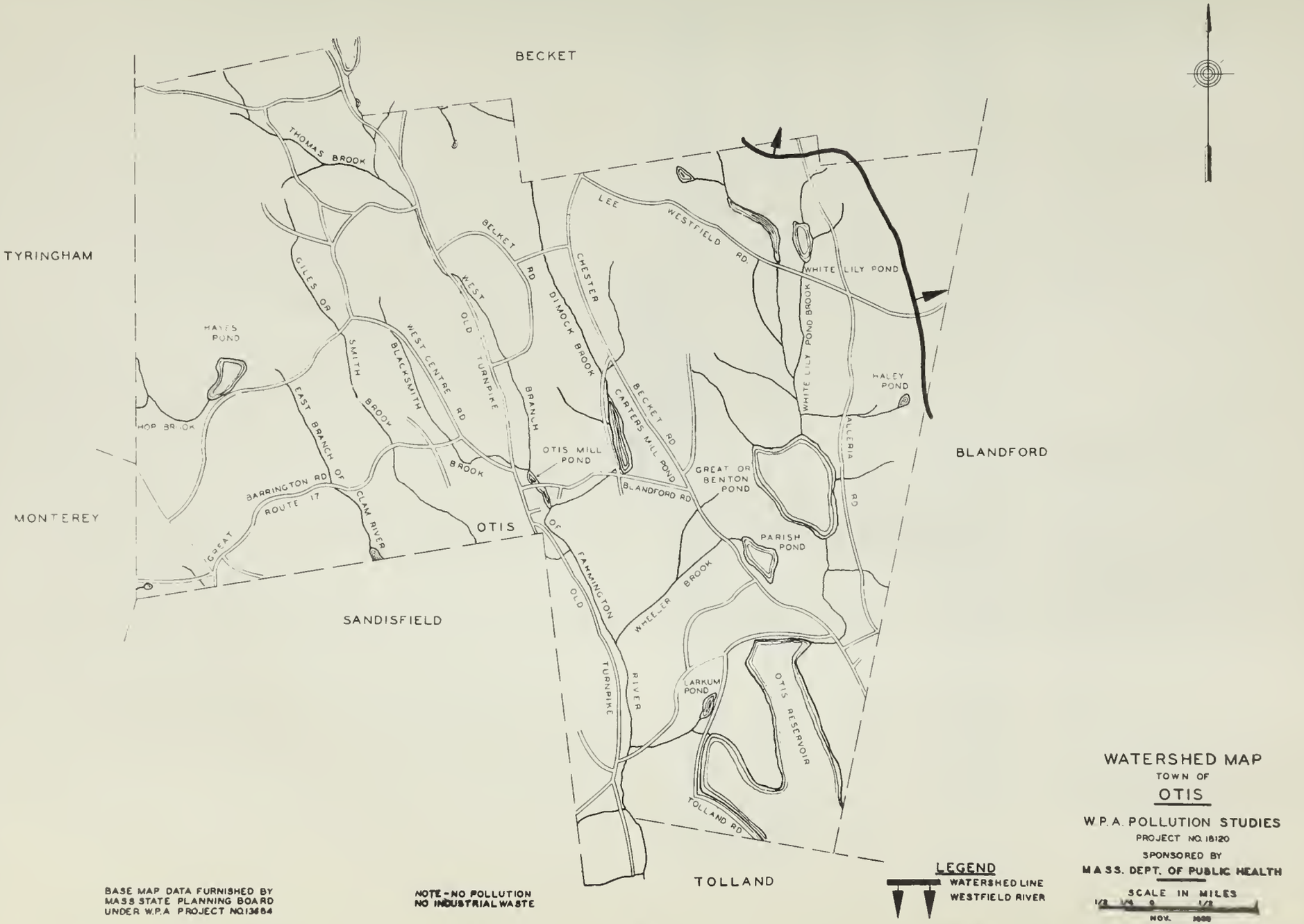
The Town of Montgomery, located in the northern section of Hampden County, is bounded on the north by Huntington, on the northeast by Southampton, on the east and southeast by Westfield, and on the southwest and west by Russell.

With the exception of the northeastern section of the Town, which forms part of the main Connecticut River Watershed, the entire area of Montgomery lies within the Westfield River Watershed. The Westfield itself, flowing in a general southeasterly direction, forms, for a distance of approximately 2 1/2 miles, a natural part of the Montgomery-Russell boundary.

Water supply is obtained from dug or driven wells, privately owned.

Sewage is disposed of by means of privies, cesspools and septic tanks.

Rural in character, sparsely populated, with the greater part of its area in forest cover, Montgomery contributes little, if any, pollution to the Westfield River or its tributaries other than is usual to the natural drainage of the terrain.



WATERSHED MAP
TOWN OF
OTIS

W.P.A. POLLUTION STUDIES
PROJECT NO. 16120
SPONSORED BY
MASS. DEPT. OF PUBLIC HEALTH

BASE MAP DATA FURNISHED BY
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UNDER W.P.A. PROJECT NO.13684

NOTE - NO POLLUTION
NO INDUSTRIAL WASTE

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OTIS

Area - 37.90 Sq. Mi. Area in Watershed - 1.71 Sq. Mi.

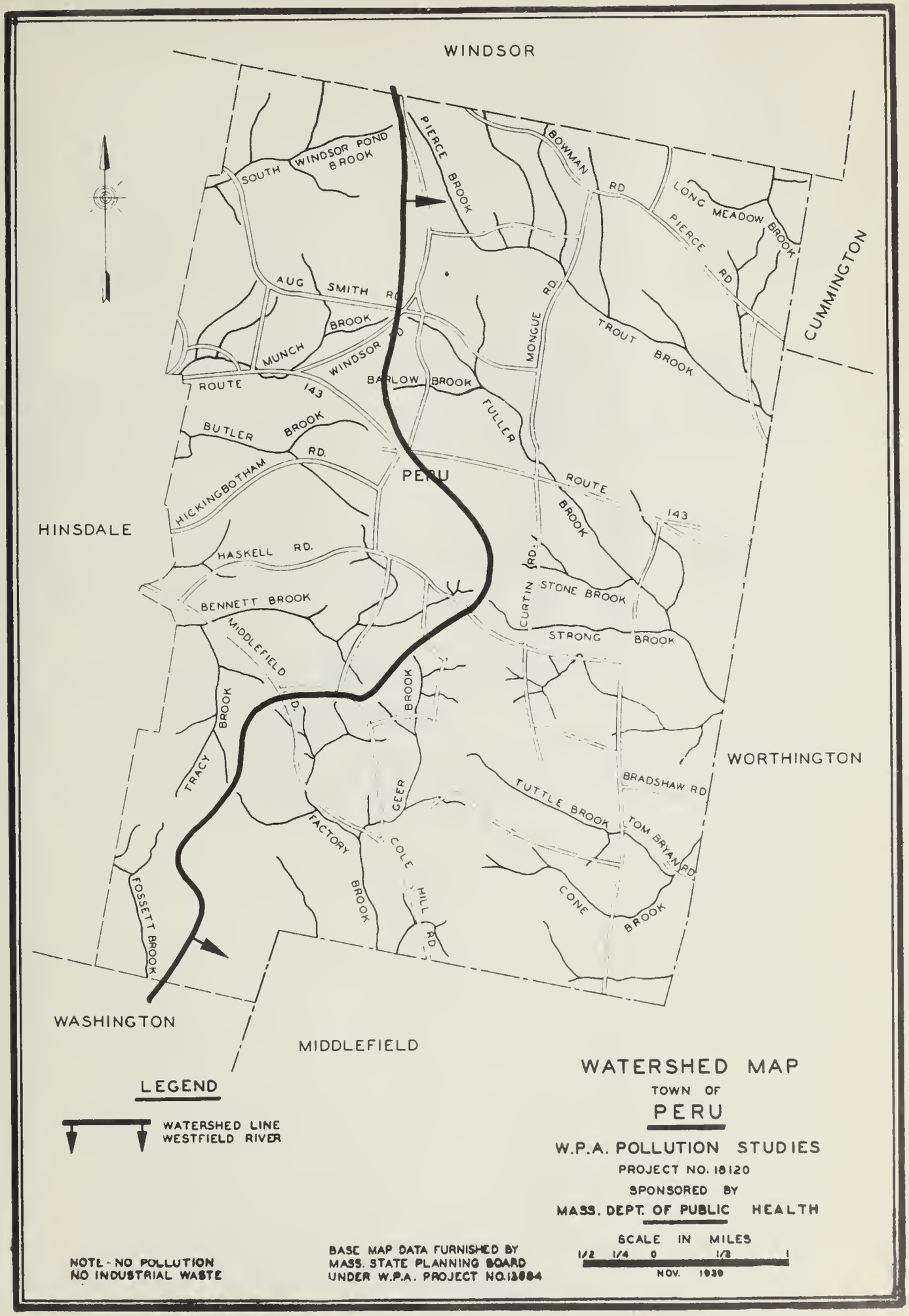
Population 1935 - 415 Est. Pop. in Watershed - 10

The Town of Otis is situated in the southeastern section of Berkshire County, bordered on the north by Becket, on the east by Blandford, on the south by Tolland and Sandisfield, and on the west by the towns of Monterey and Tyringham.

Water supply is obtained from privately owned dug or driven wells at each premise.

Sewage, consisting entirely of domestic wastes, is disposed of by the usual rural means of privies, cesspools and septic tanks.

As only a relatively small sparsely populated section of the Town lies within the watershed of the Westfield River, pollution contributed by the area is negligible.



WATERSHED MAP

TOWN OF

PERU

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

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PERU

Area - 26.10 Sq. Mi. Area in Watershed - 17.38 Sq. Mi.

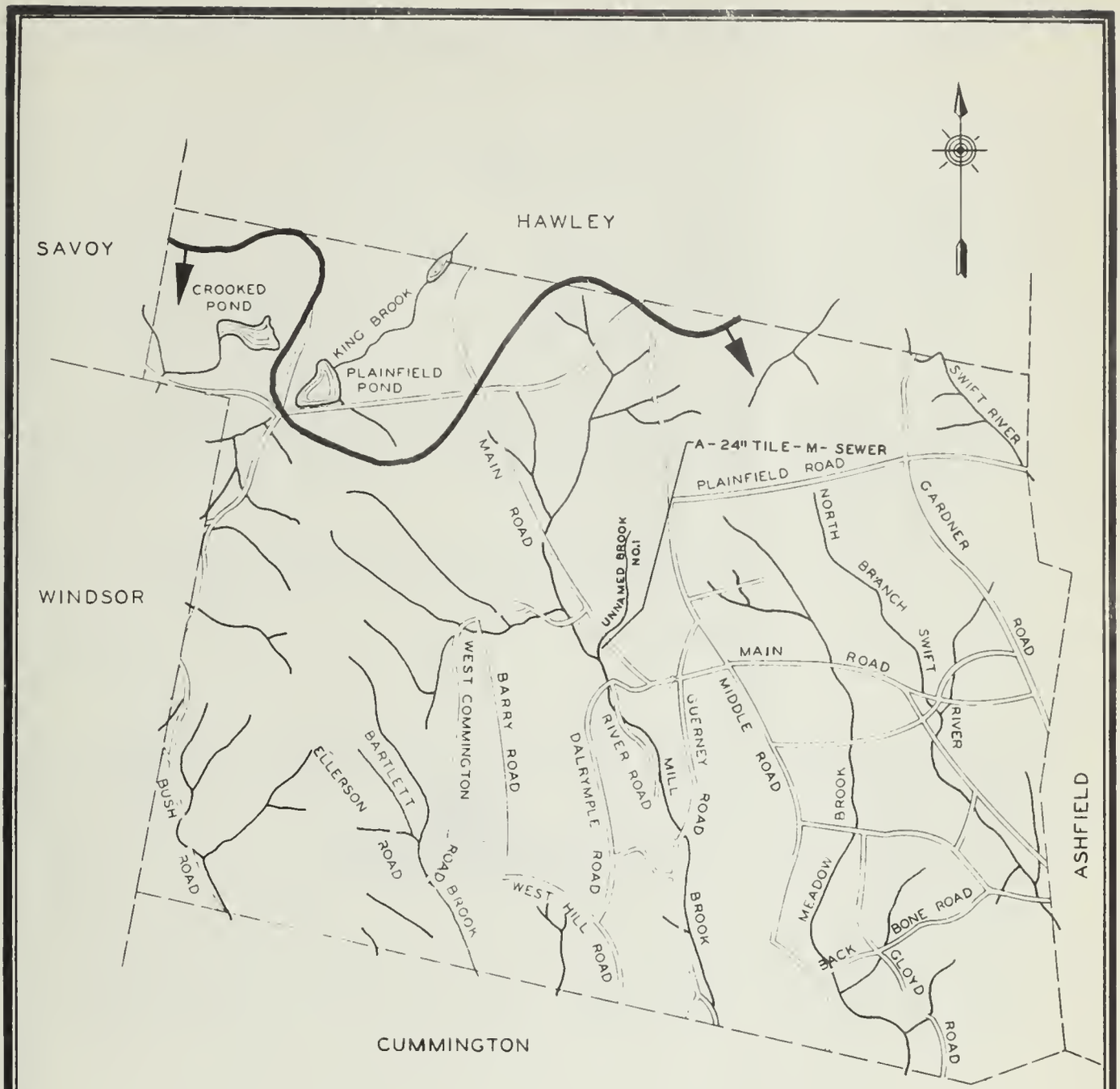
Population 1935 - 151 Est. Pop. in Watershed - 101

Situated in the eastern section of Berkshire County, in the highest part of the Berkshire Hills, the Town of Peru, victim of an inexorable agricultural and population decline, is bordered on the north by Windsor, on the east by Cummington and Worthington, on the south by Middlefield and Washington, and on the west by Hinsdale.

Slightly more than two-thirds of the Town's total area lies within the Westfield River Watershed, source tributaries to the Middle Branch of the Westfield River heading in the hills of the Town at an elevation of approximately 2,200 feet above sea-level.

Water supply is obtained from privately owned dug or driven wells, while sewage disposal is by means of privies, cesspools and septic tanks.

Sparsely populated and with the greater part of its area in forest cover, including a State Forest, Peru contributes a negligible amount of pollution to the streams of the Watershed.



LEGEND

M — MUNICIPAL SEWER

WATERSHED LINE
WESTFIELD RIVER

SOURCES OF POLLUTION
TOWN OF
PLAINFIELD

W P A POLLUTION STUDIES
PROJECT NO. 18120
SPONSORED BY
MASS DEPT OF PUBLIC HEALTH

SCALE IN MILES
1/2 1/4 0 1/2 1
NOV. 1938

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W. P. A. PROJECT NO. 13664

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PLAINFIELD

Area - 21.40 Sq. Mi. Area in Watershed - 10.40 Sq. Mi.

Population 1935 - 332 Est. Pop. in Watershed - 312

Plainfield, a sparsely populated rural township, is located in the extreme northwestern section of Hampshire County, bordered on the north by Hawley, on the east by Ashfield, on the south by Cummington, and on the west by the towns of Windsor and Savoy.

The Town lies almost wholly within the Westfield River Watershed, forming part of its northernmost reaches.

Water supply is obtained from privately owned dug or driven wells.

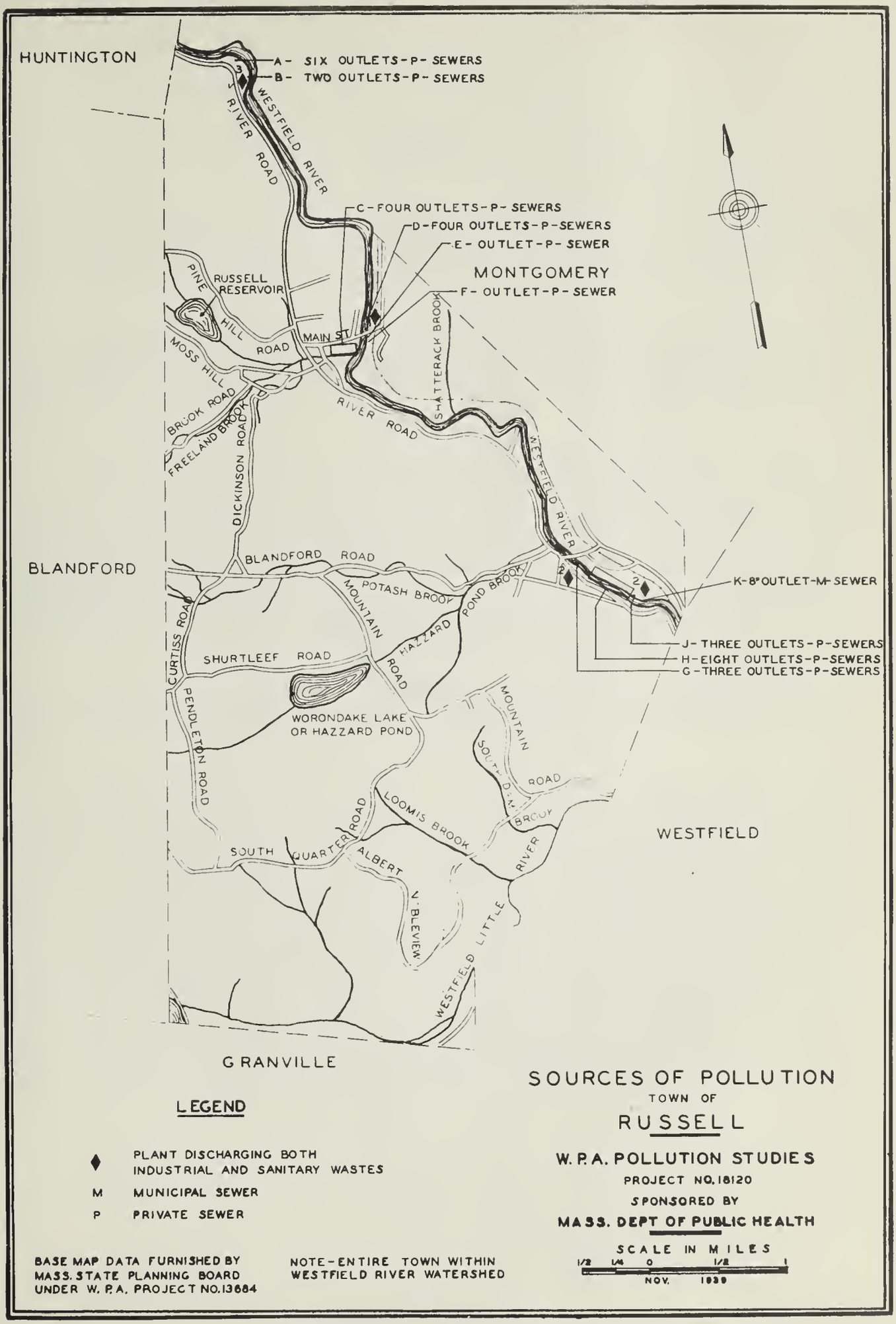
Sewage is disposed of by the usual rural means of privies, cesspools and septic tanks. These are widely located and contribute little, if any, pollution to the streams of the area. There is, however, a municipal sewer serving a small population in the heart of the Town which discharges raw sewage through a 24" outlet directly to a minor tributary of the Westfield River. In all probability, this sewer was constructed for use as a surface water drain, but in any event, no plan of it has ever been presented to the Massachusetts Department of Public Health for approval under the provisions of General Laws, Chapter III, Section 17, as amended.

WASTE OUTLETS

IN

PLAINFIELD

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	24" Tile	East Bank Unnamed Brook #1	Raw Sewage	Town Sewer - Off Main Road



LEGEND

- ♦ PLANT DISCHARGING BOTH INDUSTRIAL AND SANITARY WASTES
- M MUNICIPAL SEWER
- P PRIVATE SEWER

BASE MAP DATA FURNISHED BY MASS. STATE PLANNING BOARD UNDER W. P. A. PROJECT NO. 13684

NOTE-ENTIRE TOWN WITHIN WESTFIELD RIVER WATERSHED

SOURCES OF POLLUTION

TOWN OF

RUSSELL

W. P. A. POLLUTION STUDIES

PROJECT NO. 16120

SPONSORED BY

MASS. DEPT OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2 1

NOV. 1939

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UNIVERSITY OF ILLINOIS

RUSSELL

Area - 18.06 Sq. Mi. Area in Watershed - 18.06 Sq. Mi.

Population 1935 - 1,283 Est. Pop. in Watershed - 1,283

The Town of Russell is located in the westerly part of Hampden County, bordered by Montgomery on the northeast, Westfield on the east, Granville on the south, Blandford on the west, and Huntington on the northwest.

Russell's entire area lies within the Westfield River Watershed. The Westfield River itself forms a natural part of the northeastern boundary, thence entering the Town and flowing in a general southeasterly direction but close to the northeastern border. Drainage of the southern part of the Town is effected by the Westfield Little River, which flows easterly, roughly parelleling the Town's southern border, thence turning to the northeast and forming a natural part of the Russell-Westfield boundary.

The municipal water supply, obtained from Black Brook Reservoir and passed through slow sand filtration, is distributed by gravity to 218 services, none of which are metered.

Sewage disposal in the more rural sections of the Town is taken care of by means of privies, cesspools and septic tanks, which are widely located and constitute negligible sources of pollution to the streams of the Watershed. In those areas close to 3 paper mills, however, an unsatisfactory condition exists. As may be seen from the following table, "Waste Outlets in Russell", one municipal sewer outlet and 32 private outlets discharge untreated wastes (including 2,338,000 gallons per day of industrial wastes) directly to the Westfield River and Freeland Brook. This situation has been recognized by the Town and plans have been submitted to, and approved by, the Massachusetts Department of Public Health for the construction of a sewerage system in the village of Russell with eventual treatment of the sewage.

WASTE OUTLETS

IN

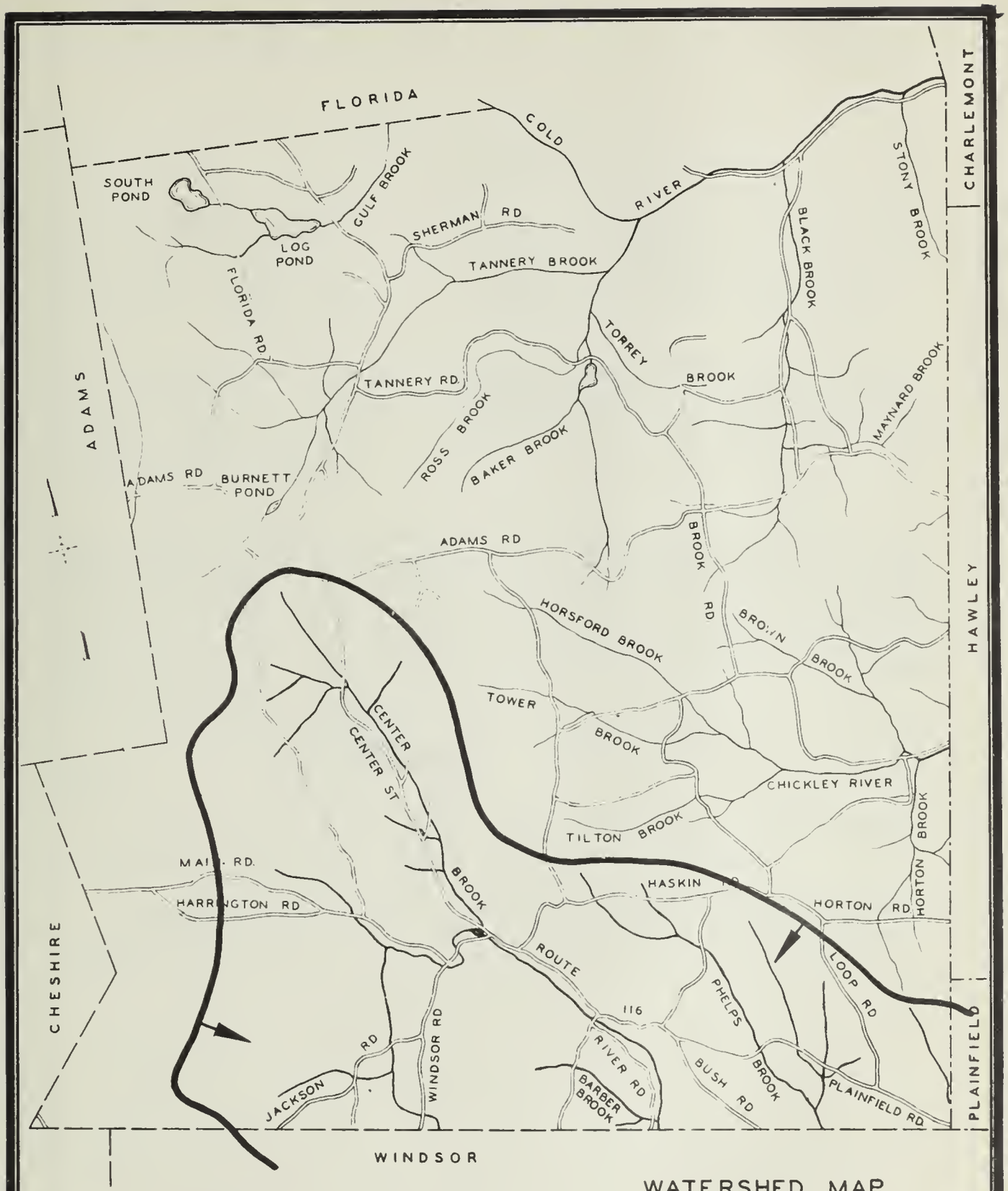
RUSSELL

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
*A	6 Outlets	West Bank Westfield River	Sewage	From Houses on River Road
*B	2 Outlets	West Bank Westfield River	Sewage	From Mill on River Road
C	4 Outlets	North Bank Freeland Brook and West Bank Westfield River	Sewage	From Houses on Main Street
D	4 Outlets	East Bank Westfield River	Sewage	From Mill near Main Street
E	Outlet	East Bank Westfield River	Sewage	From House near Main Street
F	Outlet	East Bank Westfield River	Sewage	From House near Grove Street
G	3 Outlets	West Bank Westfield River	Sewage	From Mill near River Road
H	8 Outlets	West and East Banks Westfield River	Sewage	From Houses on River Road
J	3 Outlets	East Bank Westfield River	Sewage	From Paper Mill
*K	8" Iron	North Bank Westfield River (submerged)	Sewage	Town Sewer

*Recorded subsequent to House Document #2050

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF RUSSELL

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Glassine Paper	Wash Water Fibre Wastes	550,000	24	Westfield River	90	Westfield River
2	Paper	Wash Water	1,788,000	24	Westfield River	250	Westfield River
3	Paper	-	-		-	-	Westfield River



LEGEND

WATERSHED LINE
WESTFIELD RIVER

WATERSHED MAP

TOWN OF

SAVOY

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

0 1/2 1

NOV. 1939

NOTE - NO POLLUTION
NO INDUSTRIAL WASTE

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W. P. A. PROJECT NO. 13684

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SAVOY

Area - 36.11 Sq. Mi. Area in Watershed - 10.93 Sq. Mi.

Population 1935 - 299 Est. Pop. in Watershed - 159

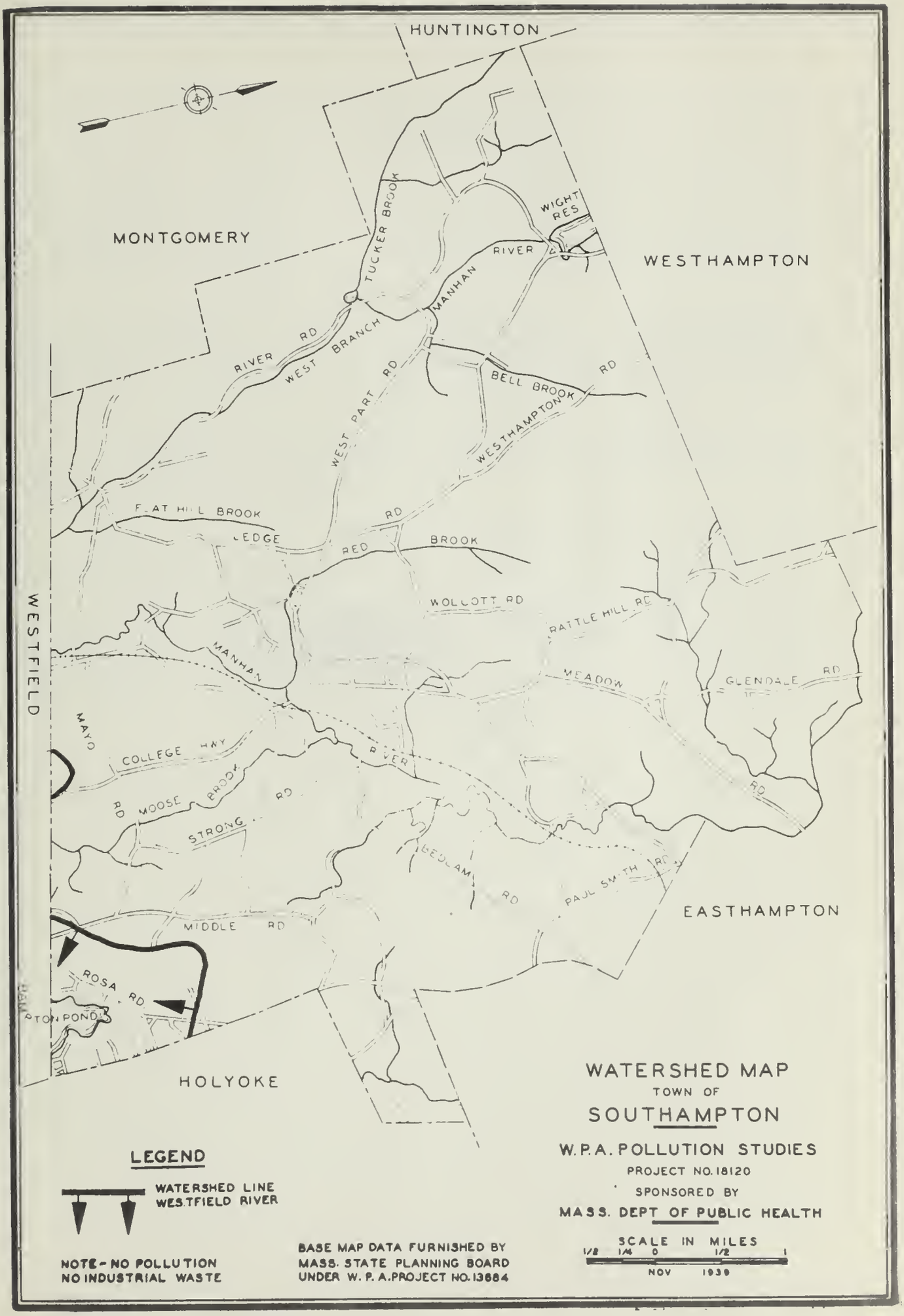
The rural and sparsely populated Town of Savoy is located in the northeastern section of Berkshire County, bounded on the north by the Town of Florida, on the east by Charlemont, Hawley, and Plainfield, on the south by Windsor, and on the west by the towns of Cheshire and Adams.

The main Westfield River rises in Savoy at an elevation of approximately 2,300 feet above sea level and with its numerous minor tributaries drains 30.27% of the Town's total area, this area forming the northernmost reaches of the Westfield River Watershed. The greater portion of Savoy lies within the Deerfield River Watershed, with the southwestern section forming part of the Hoosic River Watershed.

Water supply is obtained from privately owned dug or driven wells.

Sewage disposal is taken care of by the usual rural means of cesspools, privies, and septic tanks, widely located.

With the greater part of the Town's area in forest cover, pollution contributed to the Westfield River or its tributaries is negligible.



WATERSHED MAP
TOWN OF
SOUTHAMPTON

W.P.A. POLLUTION STUDIES
PROJECT NO. 18120
SPONSORED BY
MASS. DEPT OF PUBLIC HEALTH

LEGEND

WATERSHED LINE
WESTFIELD RIVER

NOTE - NO POLLUTION
NO INDUSTRIAL WASTE

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W. P. A. PROJECT NO. 13684

SCALE IN MILES
1/2 1/4 0 1/2 1

NOV 1939

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SOUTHAMPTON

Area - 29.00 Sq. Mi. Area in Watershed - 1.00 Sq. Mi.

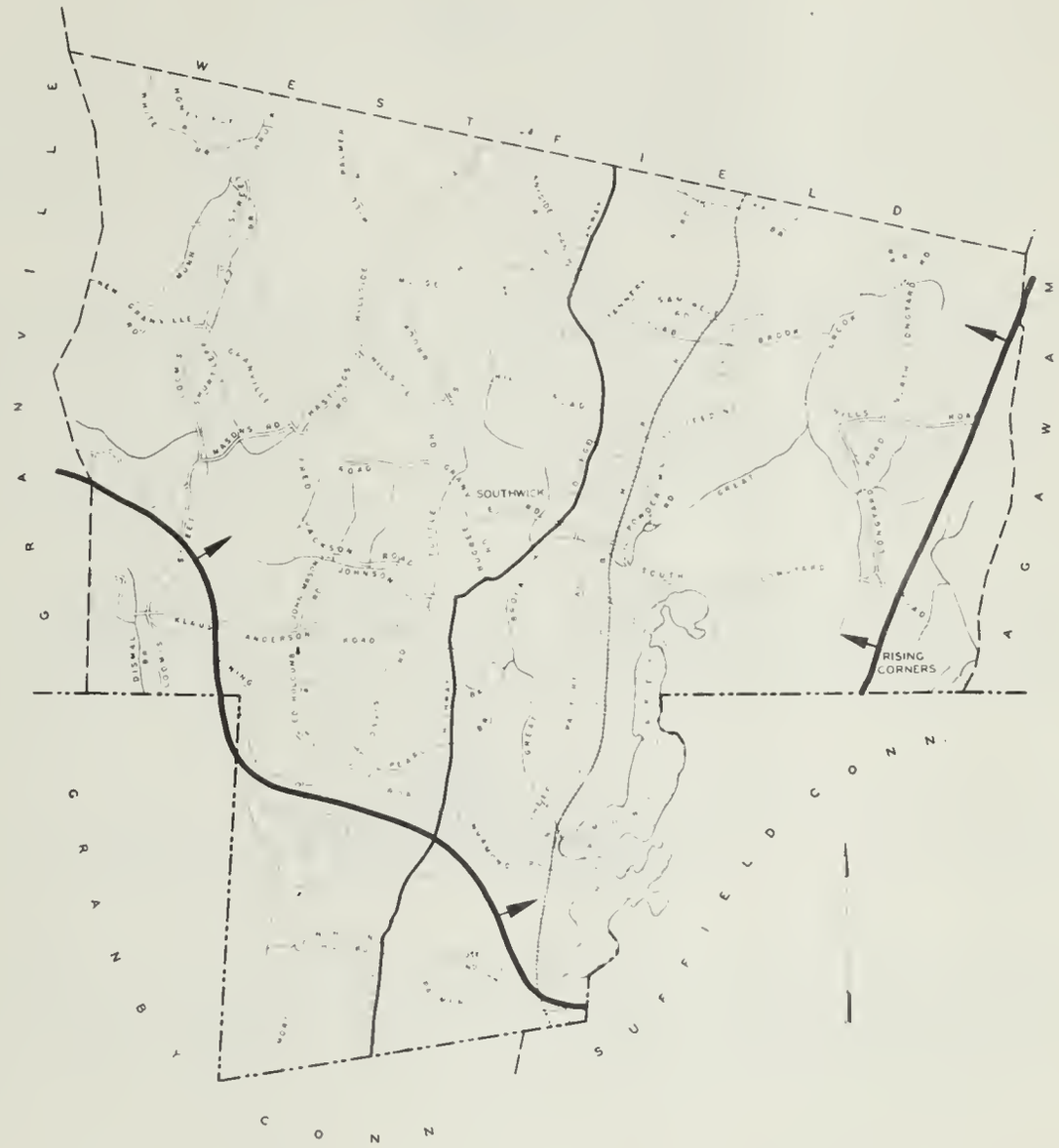
Population 1935 - 954 Est. Pop. in Watershed - Negligible

Southampton, a rural town situated in southern Hampshire County, is bounded on the north by Westhampton and Easthampton, on the east by Easthampton and the City of Holyoke, on the south by Westfield, and on the west by Montgomery and Huntington.

Water supply is obtained from one of the reservoirs of the City of Holyoke municipal water supply, although the service connections are few in number.

Sewage, consisting of domestic wastes only, is disposed of by the usual rural means of privies, cesspools, and septic tanks.

As only a very small portion of Southampton lies within the Westfield River Watershed, in which the population is negligible, the area is unimportant in relation to the scope of this particular report.



LEGEND

WATERSHED LINE
WESTFIELD RIVER

WATERSHED MAP

TOWN OF

SOUTHWICK

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2 1

NOV 1939

NOTE - NO POLLUTION
NO INDUSTRIAL WASTE

BASE MAP PREPARED BY
MASS STATE PLANNING BOARD
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SOUTHWICK

Area - 31.79 Sq. Mi. Area in Watershed - 26.95 Sq. Mi.

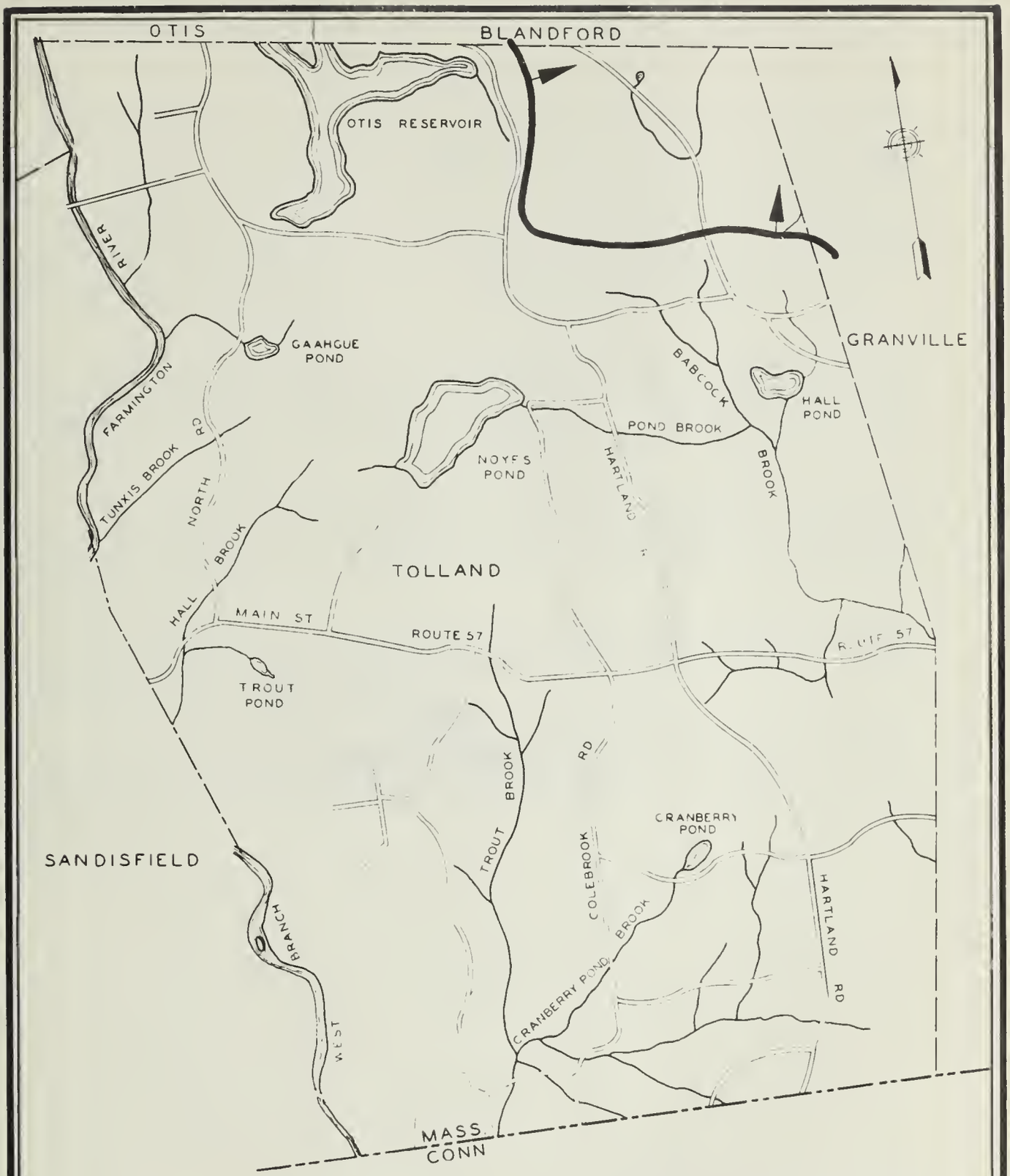
Population 1935 - 1,540 Est. Pop. in Watershed - 1,440

The Town of Southwick is situated in the southern section of Hampden County, bordered on the north by the City of Westfield, on the east by the Town of Agawam, on the south by the State of Connecticut, and on the west by the Town of Granville. However, the extreme southern salient of Southwick, comprising an area of approximately 7 square miles, is bounded on the east, south and west by the State of Connecticut.

Congamond Lake, a portion of the eastern shore of which forms a natural boundary between the Town and the State of Connecticut, and its outlet, Great Brook, effects the principal drainage of that part of Southwick lying within the Watershed of the Westfield River.

Water supply is obtained from the City of Springfield municipal water supply and is distributed by gravity to 139 services, 94% of which are metered.

Sewage, which consists entirely of domestic wastes, is disposed of by the usual rural means of privies, cesspools and septic tanks, which, because of their wide location and distance from the streams of the area, constitute negligible sources of pollution.



WATERSHED MAP

TOWN OF

TOLLAND

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT OF PUBLIC HEALTH

LEGEND

WATERSHED LINE
WESTFIELD RIVER

NOTE. NO POLLUTION
NO INDUSTRIAL WASTE

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W. P. A. PROJECT NO. 13684

SCALE IN MILES

1/2 1/4 0 1/2 1

NOV. 1939

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TOLLAND

Area - 32.82 Sq. Mi. Area in Watershed - 1.95 Sq. Mi.

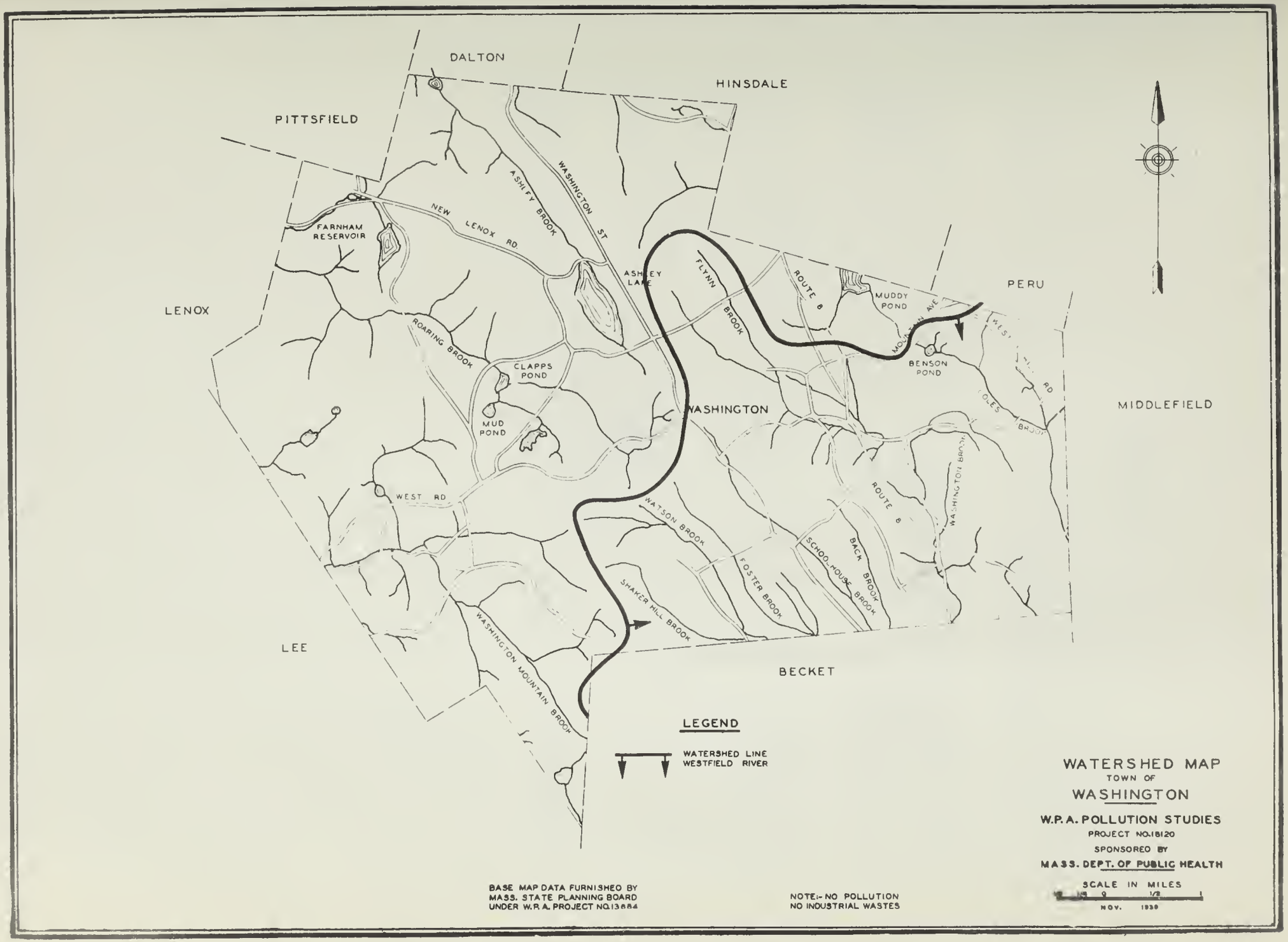
Population 1935 - 141 Est. Pop. in Watershed - 20

The Town of Tolland, a predominantly rural community, is situated in the extreme southwestern section of Hampden County, bordered by Otis and Blandford on the north, Granville on the east, the State of Connecticut on the south, and Sandisfield on the west.

Only the extreme northeastern section of Tolland, comprising 6.01% of its total area, lies within the Westfield River Watershed, the greater portion of the Town forming a part of the Farmington River Watershed.

Water supply is obtained from privately owned dug or driven wells, while domestic wastes are disposed of by means of privies, cesspools, and septic tanks.

Sparsely populated and a greater part of its area in forest cover, Tolland has relatively little bearing on the general pollution problem of the Westfield River.



WATERSHED MAP
TOWN OF
WASHINGTON

W.P.A. POLLUTION STUDIES
PROJECT NO. 18120
SPONSORED BY
MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES
0 1/2 1
NOV. 1939

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W.P.A. PROJECT NO. 13884

NOTE:- NO POLLUTION
NO INDUSTRIAL WASTES

LIBRARY
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UNIVERSITY OF ILLINOIS

WASHINGTON

Area - 38.78 Sq. Mi. Area in Watershed - 15.35 Sq. Mi.

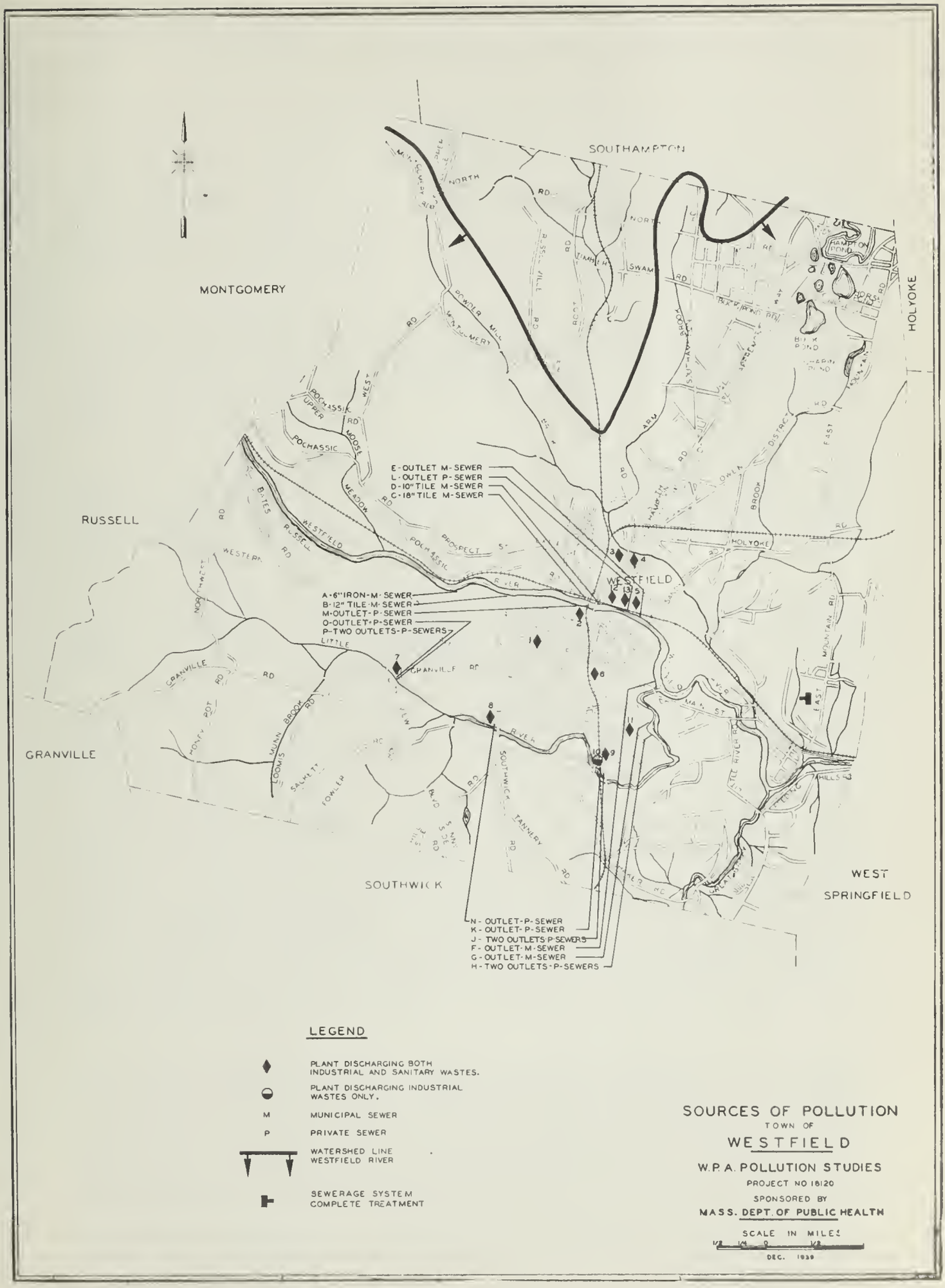
Population 1935 - 252 Est. Pop. in Watershed - 102

The Town of Washington, situated in the heart of the Berkshire Hills in east central Berkshire County, is bounded on the north by the towns of Dalton, Hinsdale and Peru, on the east by Middlefield, on the south by Becket, on the southwest by Lee, on the west by Lenox, and on the northwest by the City of Springfield.

Of Washington's total area, 39.58% lies within the Watershed of the Westfield River, the West Branch of the river rising in the Town at an altitude of approximately 1,900 feet above sea-level and flowing in a general southeasterly direction. The greater portion of the Town is drained by tributaries of the Housatonic River.

Water supply is obtained from privately owned dug or driven wells, while sewage disposal is effected by the usual rural means of privies, septic tanks, and cesspools.

Sparsely populated and the greater part of its area in forest cover, Washington contributes little, if any, pollution to the Westfield River or its tributaries.


SOUTHAMPTON
MONTGOMERY
HOLYOKE
RUSSELL
WESTFIELD
GRANVILLE
SOUTHWICK
WEST SPRINGFIELD
E-OUTLET M-SEWER
L-OUTLET P-SEWER
D-10" TILE M-SEWER
C-18" TILE M-SEWER
A-6" IRON-M-SEWER
B-12" TILE-M-SEWER
M-OUTLET-P-SEWER
O-OUTLET-P-SEWER
P-TWO OUTLETS-P-SEWERS
N-OUTLET-P-SEWER
K-OUTLET-P-SEWER
J-TWO OUTLETS-P-SEWERS
F-OUTLET-M-SEWER
G-OUTLET-M-SEWER
H-TWO OUTLETS-P-SEWERS
LEGEND
PLANT DISCHARGING BOTH INDUSTRIAL AND SANITARY WASTES.
PLANT DISCHARGING INDUSTRIAL WASTES ONLY.
M MUNICIPAL SEWER
P PRIVATE SEWER
WATERSHED LINE WESTFIELD RIVER
SEWERAGE SYSTEM COMPLETE TREATMENT
SOURCES OF POLLUTION
TOWN OF
WESTFIELD
W.P.A. POLLUTION STUDIES
PROJECT NO 18120
SPONSORED BY
MASS. DEPT. OF PUBLIC HEALTH
SCALE IN MILES
DEC. 1939

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WESTFIELD

Area - 47.53 Sq. Mi. Area in Watershed - 43.11 Sq. Mi.

Population 1935 - 18,788 Est. Pop. in Watershed - 18,688

The City of Westfield is situated in the west central section of Hampden County, bordered on the north by Southampton, on the east by Holyoke and West Springfield, on the south by Southwick, on the southwest by Granville, and on the west by the towns of Russell and Montgomery.

The Westfield River flows through the City in a general southeasterly direction and, including the Westfield Little River and other minor tributaries, drains 90.70% of the City's total area, the remainder, comprising part of the northern section of the City, lying within the Connecticut River Watershed.

The municipal water supply is obtained from 3 sources: Montgomery, Winchell, and Granville Reservoirs, and treated by chlorination, is distributed by gravity to 3,247 unmetered services.

Westfield is provided with a municipal sewerage system, which includes 2 sewers constructed on the combined plan, discharging sewage without treatment of any kind directly into the Westfield River by means of 6 outlets, and into the Westfield Little River through 1 outlet. Also, 11 private sewer outlets discharge untreated wastes, including 672,500 gallons of industrial wastes daily, directly into these streams. None of these outlets are submerged, all of them being so-called bank outlets, and, below some of them, offensive conditions have been found. The following table, "Wastes Discharged to Westfield River and its Tributaries by Industries of Westfield", shows an additional 102,000 gallons of industrial wastes discharged daily to the municipal sewers, these wastes also eventually discharging into the river or its principal tributary.

The Massachusetts Department of Public Health, in its Special Report, House Document #2050, states as follows: "...'Early in the year 1938 the board of health of Westfield requested advice relative to the cause of the death of fish in the Westfield River, and after an examination the Department stated in a communication dated June 15, 1938, that the condition of the fish was due to the discharge of wastes into the Westfield River or Westfield Little River from one or more of the various industries in the City of Westfield. The Department further stated that so long as sewage

and industrial wastes from the City of Westfield are discharged into these rivers without treatment there will always be a deleterious effect upon fish life'..."

WASTE OUTLETS

IN

WESTFIELD

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	6" Iron	South Bank of Westfield River	Raw Sewage	Near Poor Farm on Russell Road City Sewer
B	12" Tile	South Bank of Westfield River	Raw Sewage	Near Ridgeway Street - City Sewer
C	18" Tile	North Bank of Westfield River	Raw Sewage	Near start Pochassic Road - City Sewer
D	10" Tile	North Bank of Westfield River	Raw Sewage	Near Atwater Street - City Sewer
E	Outlet	North Bank of Westfield River	Raw Sewage	Near Delancey Street - City Sewer
F	Outlet	South Bank of Westfield River	Raw Sewage	Near East Main Street - City Sewer
G	Outlet	West Bank Westfield Little River	Raw Sewage	Near foot of Clyde Street - City Sewer
*H	2 Outlets	West Bank of Westfield River	Industrial	From Mill on Clyde Street

WASTE OUTLETS

IN

WESTFIELD (Cont'd.)

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
*J	2 Outlets	North Bank Westfield Little River	Sanitary & Industrial	From Mill on Broad Street
K	Outlet	North Bank Westfield Little River	Sanitary	From Mill on Broad Street
*L	Outlet	North Bank of Westfield River	Industrial	From Mill on Katherine Street
M	Outlet	South Bank of Westfield River	Industrial	From Mill near R.R. Yards
N	Outlet	North Bank Westfield Little River	Industrial	From Factory on Crane Street
P	2 Outlets	North Bank Westfield Little River	Sanitary & Industrial	From Factory on Granville Road
Q	Outlet	North Bank Westfield Little River	Sewage	From house on River Road

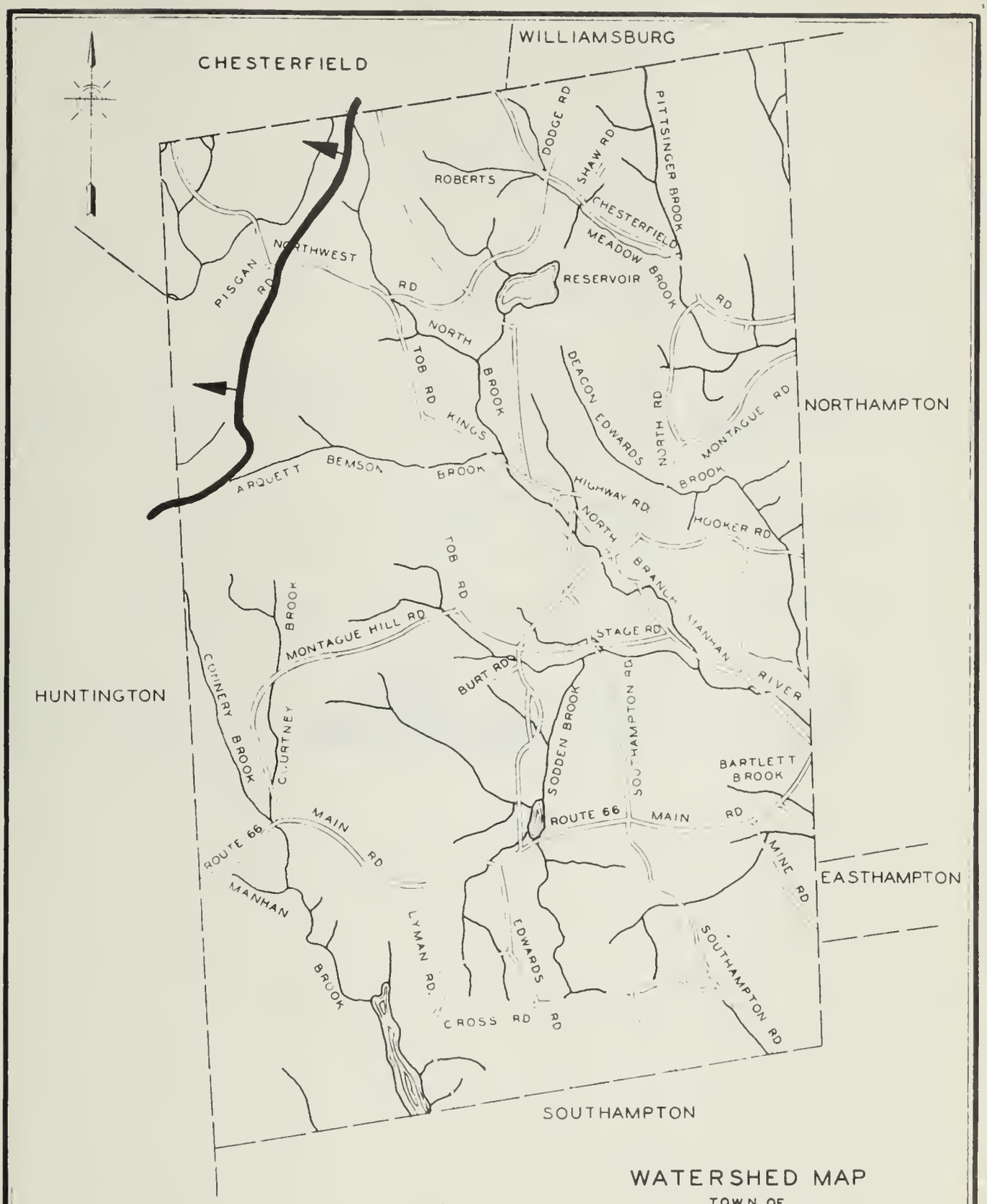
*Recorded subsequent to House Document #2050

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF WESTFIELD

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Clean Clothes	Soapy Wash Water	25,000	8	City Sewer	50	City Sewer
2	Coal & Water Gas	Oil, Tar	5,000	24	Westfield River	28	City Sewer
3	Boilers & Radiators	Wash Water	9,000	6	City Sewer	200	City Sewer
4	Casket Hardware	Wash Water	21,000	8	City Sewer	60	City Sewer
5	Corundum	Silicious Material	25,500	8	Westfield River	30	City Sewer
6	Boilers & Radiators	Wash Water	-	8	City Sewer	300	City Sewer
7	Paper for Electrical Condensers	Wash Water	242,000 46,000	24	Westfield R. City Sewer	55	Westfield River
8	Paper for Electrical Condensors	Wash Water	200,000	-	Westfield River	50	City Sewer.

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF WESTFIELD (Cont'd.)

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
9	Dyeing Cotton Thread	Dyes	35,000	9	Little Westfield River	70	Little Westfield River
10	Textile Machine Parts	None	-	24	-	225	Little Westfield River
11	Bicycles	Acids	165,000	8	Little Westfield River	450	Little Westfield River
12	Carbonated Beverage	Wash Water	600	8	City Sewer	-	City Sewer
13	Carbonated Beverage	Wash Water	400	8	City Sewer	-	City Sewer



WATERSHED MAP
TOWN OF
WESTHAMPTON

W.P.A. POLLUTION STUDIES
PROJECT NO.18120
SPONSORED BY
MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES
1/2 1/4 0 1/2 1
NOV. 1939

LEGEND

WATERSHED LINE
WESTFIELD RIVER

NOTE. NO POLLUTION
NO INDUSTRIAL WASTE

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W.P.A. PROJECT NO. 13684

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WESTHAMPTON

Area - 27.38 Sq. Mi. Area in Watershed - 2.14 Sq. Mi.

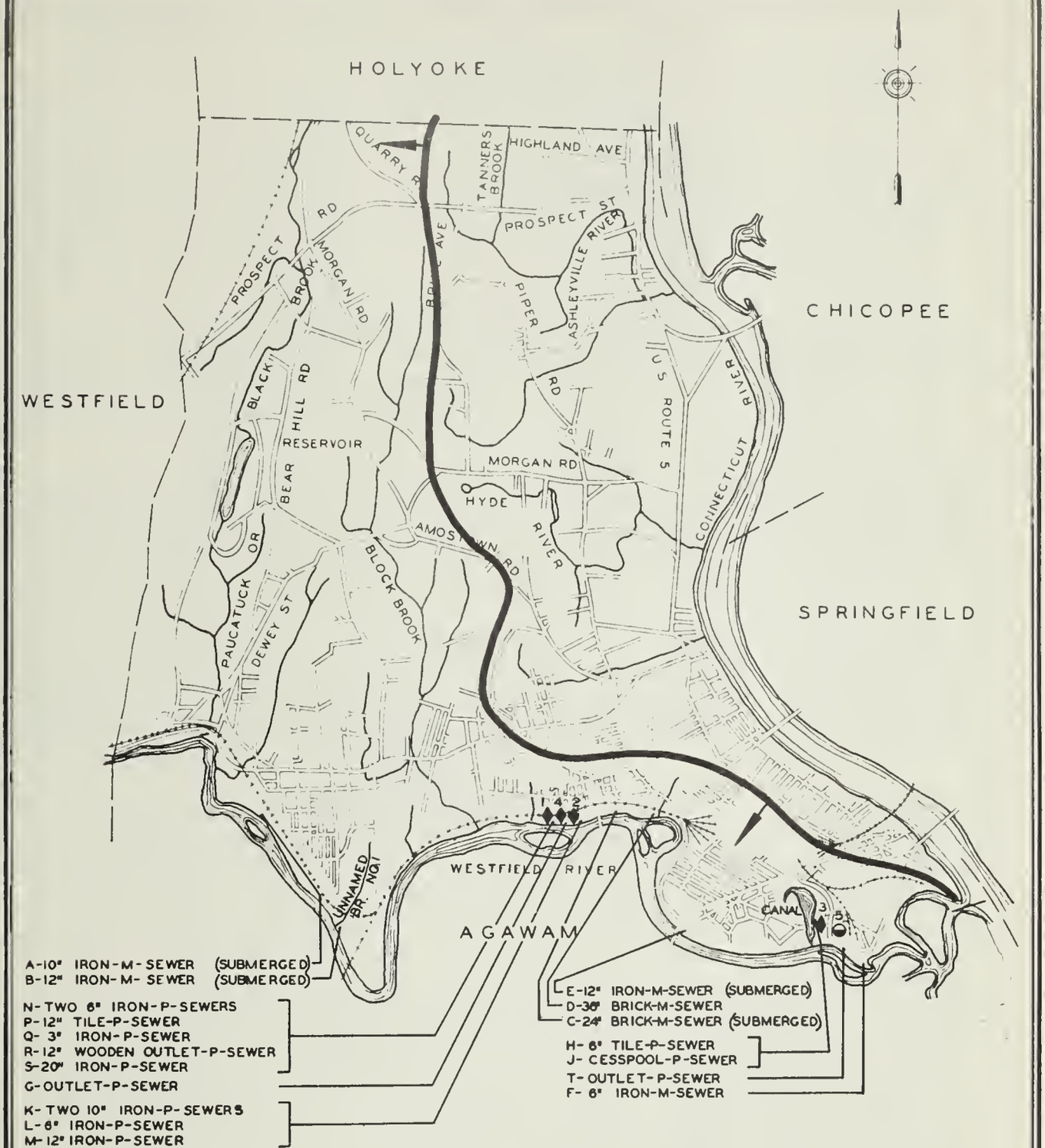
Population 1935 - 405 Est. Pop. in Watershed - Negligible

The Town of Westhampton is situated in the south central section of Hampshire County, bordered on the north by Chesterfield and Williamsburg, on the east by Northampton and Easthampton, on the south by Southampton, and on the west by Huntington.

Water supply, owned and operated by the Westhampton Water Company, is obtained from a reservoir and, untreated, is distributed by gravity to 25 unmetered services.

Disposal of sewage in this sparsely populated township is by means of privies, septic tanks and cesspools.

Little, if any, pollution is contributed to the streams of the small part of the Town's area lying within the Watershed of the Westfield River other than is usual to the natural drainage of the terrain.



LEGEND

- ♦ PLANT DISCHARGING BOTH INDUSTRIAL AND SANITARY WASTES
- ◒ PLANT DISCHARGING SANITARY WASTES ONLY
- M MUNICIPAL SEWER
- P PRIVATE SEWER
- WATERSHED LINE WESTFIELD RIVER

SOURCES OF POLLUTION

TOWN OF

WEST SPRINGFIELD

W.P.A. POLLUTION STUDIES

PROJECT NO. 16120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2 1

NOV. 1938

LIBRARY
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WEST SPRINGFIELD

Area - 17.54 Sq. Mi. Area in Watershed - 9.90 Sq. Mi.

Population 1935 - 17,118 Est. Pop. in Watershed - 8,559

The Town of West Springfield is situated in the central section of Hampden County, bordered on the north by Holyoke, on the east by Chicopee and Springfield, on the south by the Town of Agawam, and on the west by Westfield.

The Westfield River, in a winding but general southeasterly course, forms the Town's southern boundary and effects, with its several minor tributary streams, the drainage of the western and southern sections, comprising 56.44% of the Town's total area, the remaining area lying within the Connecticut River Watershed.

Water supply, owned and operated by the municipality, is obtained from reservoirs on Bear Hole Brook and, treated by aeration, slow sand filtration and chlorination, is pumped to 3,287 metered services. The municipality is also developing an extensive ground water supply.

West Springfield is provided with a municipal sewerage system discharging sewage without any treatment whatever directly into the Westfield River through 6 outlets, 2 of which are so-called bank outlets, the others being submerged. Some of the sewers are constructed on the combined plan.

In addition to the municipal sewer outlets, there are 12 private sewer outlets discharging untreated wastes directly into the Westfield River and another private outlet discharging into a canal to the river. Furthermore, a reference to the following table, "Wastes Discharged to the Westfield River and its Tributaries by Industries of West Springfield", will show that a total of 2,089,920 gallons of untreated industrial wastes are discharged into the river daily, mostly from paper making plants.

The Massachusetts Department of Public Health recommended that a study be made for a plan whereby the City of Springfield, acting jointly with the towns of West Springfield, Agawam, and Longmeadow, collect and treat the sewage of these municipalities at a treatment works to be constructed in Agawam near the mouth of the Westfield River.

The City of Springfield has recently constructed the sewage

treatment plant and the Town of West Springfield has presented preliminary plans for the interception of the sewage to be carried to this plant for treatment.

WASTE OUTLETS

IN

WEST SPRINGFIELD

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
A	10" Iron	North Bank Westfield River	Raw Sewage	Near Charles Street - Town Sewer
B	12" Iron	North Bank Westfield River	Raw Sewage	Near mouth of Unnamed Brook #1 - Town Sewer
C	24" Brick	North Bank Westfield River	Raw Sewage	300' East of Mittineaque Bridge - Town Sewer
D	36" Brick	North Bank Westfield River	Raw Sewage	Near Park Avenue - Town Sewer
E	12" Iron	North Bank Westfield River	Raw Sewage	Near Agawam Bridge - Town Sewer
F	6" Iron	North Bank Westfield River	Raw Sewage	Near Circuit Avenue - Town Sewer
*G	Outlet	North Bank Westfield River	Industrial & Sanitary	From Mill on Front Street
*H	6" Tile	East Bank of Canal to Westfield River	Industrial	From Machine Shop on Circuit Avenue
*J	Cesspool	East Bank of Canal to Westfield River	Seepage	From Machine Shop on Circuit Avenue
K	2 - 10" Iron	North Bank Westfield River	Sewage	From Paper Mill on Front Street

WASTE OUTLETS

IN

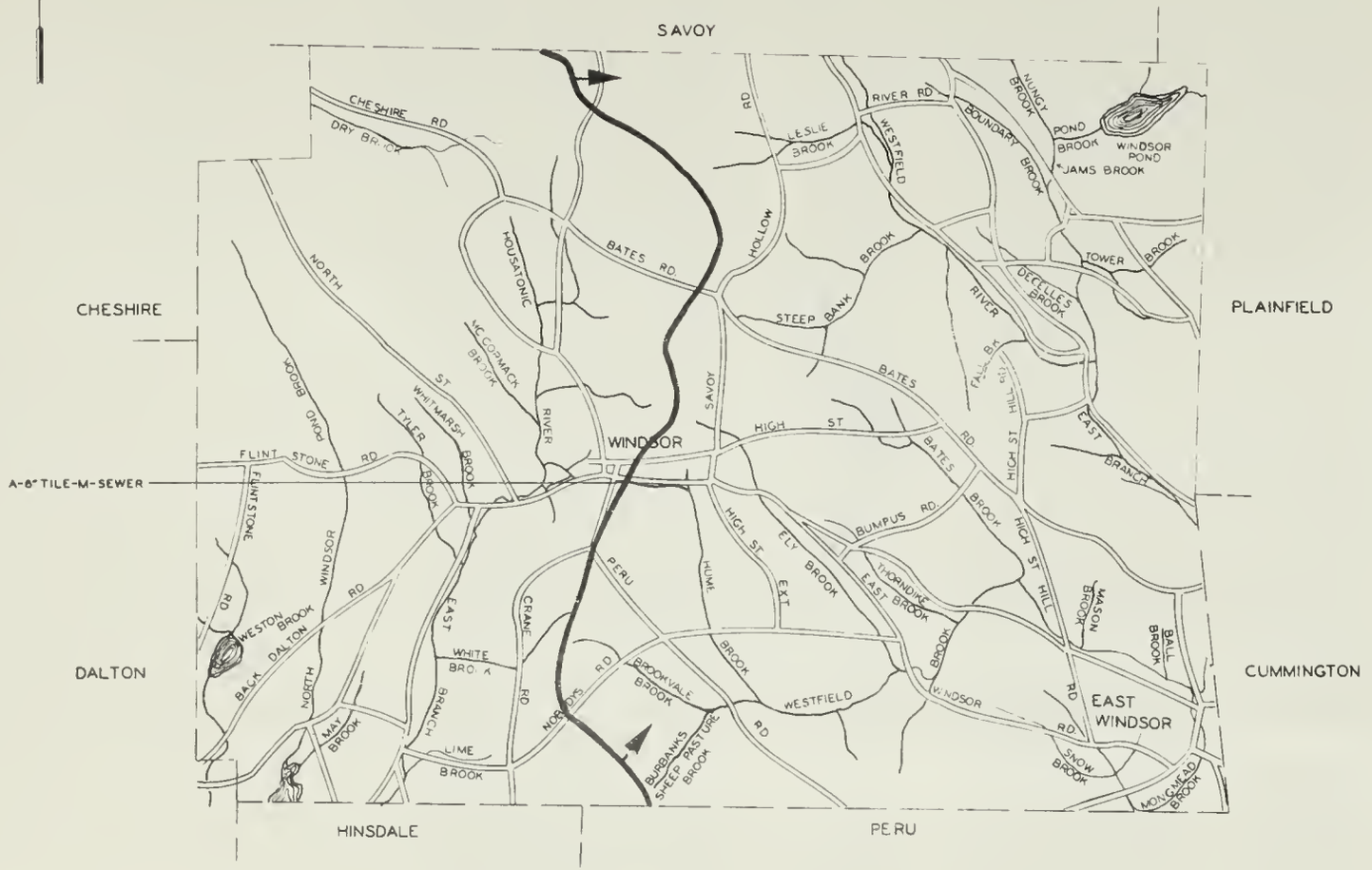
WEST SPRINGFIELD (Cont'd.)

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
L	6" Iron	North Bank Westfield River	Sewage	From Paper Mill on Front Street
M	12" Iron	North Bank Westfield River	Raw Sewage	From Paper Mill on Front Street
N	2 - 6" Iron	North Bank Westfield River	Raw Sewage	From Paper Mill on Front Street
P	12" Tile	North Bank Westfield River	Sewage	From Paper Mill on Front Street
Q	3" Iron	North Bank Westfield River	Sewage	From Paper Mill on Front Street
R	12" Wooden Outlet	North Bank Westfield River	Sewage	From Paper Mill on Front Street
S	20" Iron	North Bank Westfield River	Sewage	From Paper Mill on Front Street
T	Outlet	North Bank Westfield River	Raw Sewage	From Fibre Box Mill on Circuit Avenue

* Recorded subsequent to House Document #2050

WASTES DISCHARGED
To The
WESTFIELD RIVER AND ITS TRIBUTARIES
By
INDUSTRIES OF WEST SPRINGFIELD

REF. NO.	FINISHED PRODUCT	INDUSTRIAL WASTES				SANITARY WASTES	
		KIND	GALLONS PER DAY	HOURS PER DAY	DISPOSAL	NUMBER OF WORKERS	DISPOSAL
1	Pulp Paper	Bleach, Sizing	565,800	24	Westfield R.	56	Westfield River
2	Sulphite Paper	Dyes, Bleach, Sizing	1,488,120	24	Westfield R.	350	Westfield River
3	Steel Gears	Wash Water	34,000	24	Westfield R.	275	Cesspool to Westfield River
4	--	Machine & Wash Water	2,000	--	Westfield R.	--	Westfield River
5	Fibre Boxes	--	--	--	--	175	Westfield River



LEGEND

WATERSHED LINE
WESTFIELD RIVER

M — MUNICIPAL SEWER

NOTE:
NO INDUSTRIAL WASTE

BASE MAP DATA FURNISHED BY
MASS. STATE PLANNING BOARD
UNDER W.P.A. PROJECT NO. 13884

SOURCES OF POLLUTION

TOWN OF

WINDSOR

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2

NOV 1936

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WINDSOR

Area - 55.26 Sq. Mi. Area in Watershed - 20.70 Sq. Mi.

Population 1935 - 412 Est. Pop. in Watershed - 202

Windsor, one of the towns of the beautiful Berkshire Hills District, is situated in the eastern section of Berkshire County. It is bounded on the north by Savoy, on the east by Plainfield and Cummington, on the south by Peru and Hinsdale, on the west by Dalton, and on the northwest by Cheshire.

That portion of Windsor which lies on the eastern slopes of the Berkshires, comprising 58.71% of the Town's total area, is drained by the main Westfield River and several minor tributaries, the river entering the Town from the north and flowing in a general southeasterly direction to the Windsor-Cummington border. The western section of Windsor forms part of the Housatonic River Watershed.

Privately owned dug or driven wells provide the only sources of water supply for this sparsely populated and essentially rural community.

Sewage, which consists entirely of domestic wastes, is disposed of by means of cesspools, septic tanks, and privies, so located as to contribute little, if any, pollution to the streams of the area. It appears, however, that the Town has constructed a sewer which takes care of the overflow of cesspools from the Town Hall, school, one house, store, and several cabins, discharging into a minor tributary of the Westfield River. Plans for this sewer have never been presented to the Massachusetts Department of Public Health for approval under the provisions of General Laws, Chapter III, Section 17, as amended.

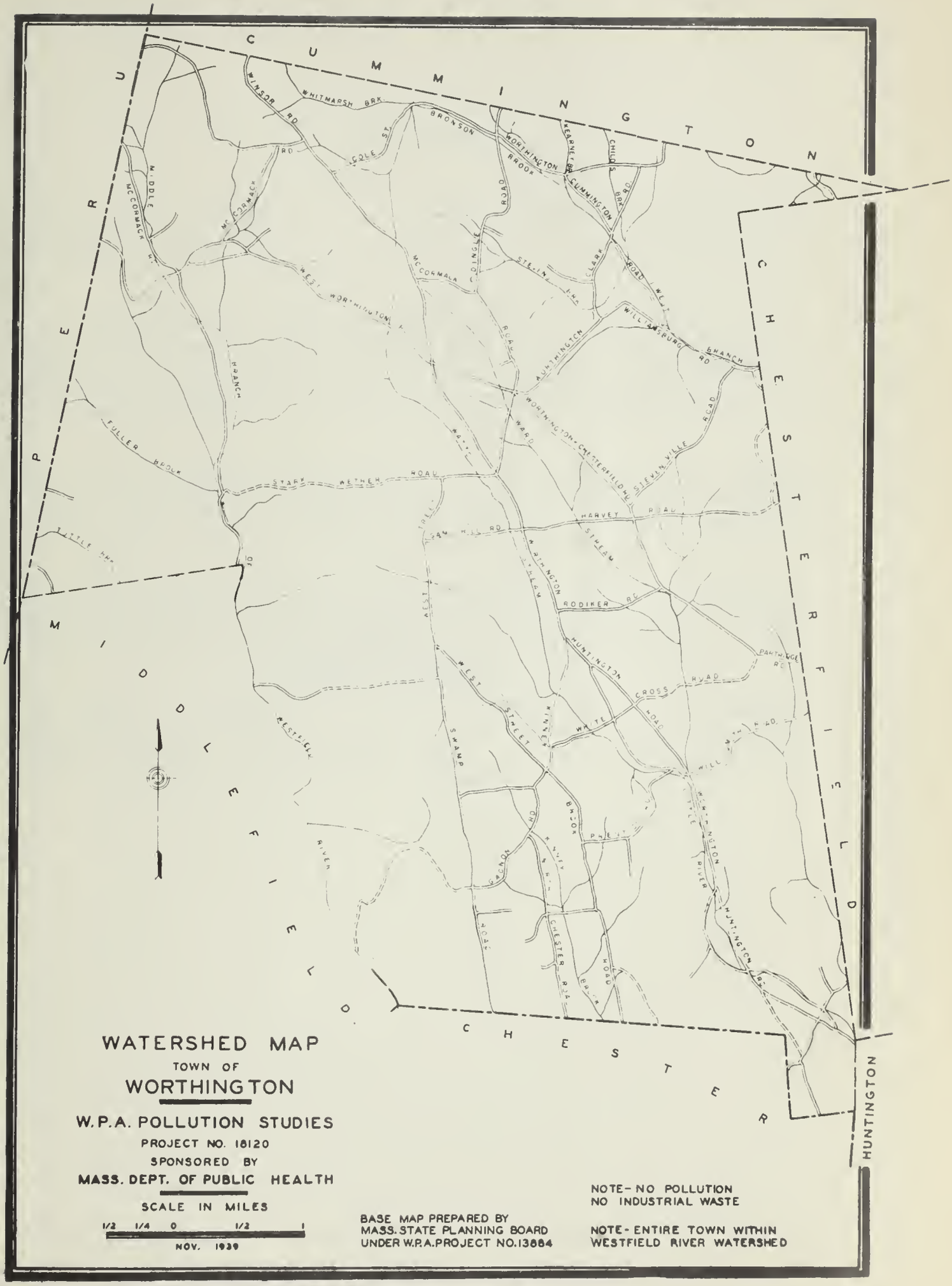
*WASTE OUTLETS

IN

WINDSOR

REF. LETTER	TYPE	LOCATION OF OUTLET	WASTE	REMARKS
*A	6" Tile	Tributary stream to Hume Brook South side of Route #9	Cesspool Overflow	From School, Town Hall, House, Store and Cabins

* Recorded subsequent to House Document #2050



WATERSHED MAP

TOWN OF

WORTHINGTON

W.P.A. POLLUTION STUDIES

PROJECT NO. 18120

SPONSORED BY

MASS. DEPT. OF PUBLIC HEALTH

SCALE IN MILES

1/2 1/4 0 1/2 1

NOV. 1939

BASE MAP PREPARED BY
MASS. STATE PLANNING BOARD
UNDER W.P.A. PROJECT NO. 13884

NOTE- NO POLLUTION
NO INDUSTRIAL WASTE

NOTE- ENTIRE TOWN WITHIN
WESTFIELD RIVER WATERSHED

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WORTHINGTON

Area - 32.12 Sq. Mi. Area in Watershed - 32.12 Sq. Mi.

Population 1935 - 530 Est. Pop. in Watershed - 530

Worthington, a sparsely populated rural community of southwestern Hampshire County, is bordered on the north by Cummington, on the east by Chesterfield, on the southeast by Huntington, on the south by Chester, on the southwest by Middlefield, and on the west by the Town of Peru.

The principal drainage means of Worthington is the Middle Branch of the Westfield River which enters the Town on its western border and flows in a general southeasterly direction, forming a natural part of the Worthington-Middlefield boundary.

Water supply for the Worthington Fire District is obtained from springs, untreated, and is distributed by gravity to 36 unmetered services. Residents of the outlying districts obtain their water supply from privately owned dug or driven wells.

Sewage, consisting entirely of domestic wastes, is disposed of by means of privies, cesspools, and septic tanks, which are widely located and contribute little, if any, pollution to the Westfield River or its tributary streams.

PART III

CHEMICAL ANALYSES

OF

WESTFIELD RIVER

CHEMICAL ANALYSIS
OF
WESTFIELD RIVER

In the conduct of such a pollution survey as this, it is not sufficient to locate and identify waste disposal outlets and those conditions of industrial waste, which, by their very circumstance, constitutes a detrimental influence to the Westfield River itself and thereby tend to effect the health and economic development of those communities within that area the river may drain.

Such analyses are primarily chemical in scope. By the measure of "Biochemical Oxygen Demand", (B.O.D.); "Dissolved Oxygen", (D.O.); "Chlorides", "Nitrates and Nitrites", (NO_3 & NO_2); "Free Ammonia", "Total Solids", and "Alkalinity", is determined the character and extent of pollution present. However, such analyses cannot be considered as all inclusive as other factors have a definite bearing on any final conclusions. For example, if samples of river water to which such chemical tests are to be applied are taken during a heavy rainstorm and the outlets to the river are those of a combined sewer system, an abnormal amount of solids in the sewage might be present, while on the other hand the increased volume of water would have the effect of dilution.

Likewise, while wastes discharged along a given tributary or section of a main stream may be definitely harmful to the immediate waters and the area adjacent thereto, such polluting wastes might well become disseminated through dilution and chemical action of the river water itself as it continues its flow. This is particularly true in those situations where no appreciable amount of additional wastes enter the river thereafter. Thus it may be seen that the effect of polluting wastes in any river varies as the river itself is affected by meteorological conditions or natural characteristics of the river's course.

In obtaining such chemical analyses as above referred to, the Massachusetts Department of Public Health collaborated in an intensive investigation of the Westfield River in a definite effort to determine the extent and effect of pollution as indicated by the amount of domestic sewage and industrial wastes discharged daily from the cities and towns in the Westfield River drainage area. This survey was carried on during the months of September and October of 1937.

Three stations were selected, at each one of which, water samples were taken. These stations and their locations are listed in the following table:

SAMPLING STATIONS
AND THEIR
LOCATIONS

NO.	LOCATION	DESCRIPTION
1	Westfield River	Elm Street Bridge above Westfield on Route #10 - near Railroad Station
2	Westfield River	Froghole Bridge below Westfield on Route #20
3	Westfield River	At Agawam Bridge on Route #57

At each of the stations sampling tests were taken for three twelve-hour periods: September 1, September 15, and September 29 of 1937. One 24-hour period was included, October 19 and October 20. The taking of samples started at 7.00 A.M. and continued to 7.00 P.M., or started at 7.00 P.M. and finished at 7.00 A.M. of the following day. Each sample was a one-gallon composite, collected over the duration of the run, by the taking of equal portions at half-hour intervals.

At designated times Dissolved Oxygen samples were taken at each station. In each case, the Oxygen was fixed in the field, and the samples then sent to the laboratory for titration. pH tests were also taken in the field, the data recorded, and forwarded to the laboratory with the water samples. In some instances lack of equipment presented a handicap in acquiring more complete chemical analyses, though not sufficiently serious as to preclude a rather complete chemical analysis, the details of which follow. Sites for sampling were selected with respect to adjacency of cities and towns, existing industries, and effect of tributary dilution.

Each test, 12 or 24-hour run, is shown separately and tables are presented showing the analytical results of chemical analyses, also, an average table is presented showing the results of all samples taken.

It will be noted by a study of the location of sampling stations on the Watershed Map that all three stations are within a distance of 15 miles of the mouth of the Westfield River. The reason for this being that there are no outlets or industries of consequence located in the upper regions of the Westfield or its tributaries to warrant the sampling of waters at these points.

A review of the Chemical Analyses of those waters of the Westfield River at Station 1, as shown by Table XIV, presenting average readings for all tests, reflects no evidence of any gross con-

dition of pollution. Dissolved Oxygen shows 94.4% saturation, and Biochemical Oxygen Demand, 1.8 parts per million. Oxygen Consumed is relatively low being 2.9 parts per million. Thus it may be seen that the industries of Becket, Chester, Huntington and Russell offer no serious problem to the River in general but are a pollution problem to the areas in which they are located.

However, as the Westfield River continues its course through the City of Westfield, its waters become less favorable as shown by the readings at Station 2 located below Westfield. While dissolved Oxygen remains practically unchanged, the Biochemical Oxygen Demand increases to 2.4 parts per million and the Oxygen Consumed to 4.9 parts per million. These determinations are not radically changed from Station 1, but considering the increased flow of the river below Westfield it shows the effect of the industrial wastes and the sewage from 7 municipal and 11 private outlets discharging to the Westfield River and Westfield Little River by the City of Westfield.

Early in the year 1938, the Board of Health of Westfield requested advice relative to the cause of the death of fish in the Westfield River, and after an examination the State Department of Public Health stated in a communication dated June 15, 1938, that the condition of the fish was due to the discharge of wastes into the Westfield River or Westfield Little River from one or more of the various industries in the City of Westfield. The Department further stated that so long as sewage and industrial wastes from the City of Westfield are discharged into these rivers without treatment there will always be a deleterious effect upon fish life.

Reviewing determinations at Station 3, the Dissolved Oxygen decreases to 87.5% saturation, the Biochemical Oxygen Demand is 1.9 parts per million and the Oxygen Consumed is 4.5 parts per million. A study of the area between Station 2 and 3 shows there is an increased flow and natural forces which tend to offset much of the 2,971,720 gallons per day of industrial waste together with the sewage from 12 municipal and 21 private outlets in the towns of West Springfield and Agawam.

Although the Westfield River is slightly less favorable as to condition of pollution at Station 3 than at Station 1, this does not appear of a serious nature. The adverse conditions that are present are particularly local in character, especially along the banks of the stream in Westfield, West Springfield and Agawam. Correction in this immediate area would have an important bearing on the condition of the Westfield River waters in general.

The chemical analyses at Stations 15 and 16 on the Connecticut River referred to in the report on Sources of Pollution, Connecticut River Valley, show an improvement in quality at Station 16 which is below the confluence with the Westfield River, as compared with that at Station 15, which is above the confluence.

Thus it may be seen that the Westfield River does not, at present, cause any deterioration in the quality of the water of the Connecticut River.

Should local conditions above referred to be corrected, the Westfield River would present no particular problem in regard to pollution. The river's banks and immediate area would be greatly improved, thus enhancing further opportunities for recreational development, aside from those benefits that would accrue to the general health and environment of the communities concerned.

TABLE X

CHEMICAL ANALYSES
OF
WESTFIELD RIVER

*(Test Taken Sept. 1, 1937)

Station	PARTS PER MILLION BY WEIGHT										Hydrogen ION Concentration	Average Dissolved Oxygen % Saturation
	Residue on Evaporation			Ammonia		Nitrogen as Nitrates & Nitrites	Chlorides	Oxygen Consumed	Biochemical Oxygen Demand	Alkalinity	Turbidity	
	Total	Loss on Ignition	Susp. Solids	Total Free	Total Albuminoids							
1	74	-	-	.120	.100	.150	2.0	0.5	1.0	21	3	7.0	84.5
2	65	-	-	.040	.125	.175	4.0	5.5	2.5	20	3	6.8	102.2
3	86	-	-	.030	.225	.200	3.0	6.5	2.9	24	4	6.7	63.2

*Composite Samples Collected Over 12 Hour Period

TABLE XI

CHEMICAL ANALYSES
OF
WESTFIELD RIVER

*(Test Taken Sept. 15, 1937)

Station	PARTS PER MILLION BY WEIGHT										Hydrogen ION Concentration	Average Dissolved Oxygen % Saturation
	Residue on Evaporation			Ammonia		Nitrogen as Nitrates & Nitrites	Chlorides	Oxygen Consumed	Biochemical Oxygen Demand	Alkalinity	Turbidity	
	Total	Loss on Igniton	Susp. Solids	Total Free	Total Albuminoids							
1	65	28	6	.000	.152	.042	2.0	4.0	1.8	10	5	7.0	99.7
2	79	30	16	.040	.176	.091	2.0	5.3	0.9	8	5	6.9	94.2
3	71	27	12	.040	.320	.083	2.0	4.0	0.2	12	5	7.0	101.5

*Composite Samples Collected over 12 Hour Period

TABLE XII

CHEMICAL ANALYSES
OF
WESTFIELD RIVER

*(Test Taken Sept. 29, 1937)

Station	PARTS PER MILLION BY WEIGHT										Hydrogen ION Concentration	Average Dissolved Oxygen % Saturation
	Residue on Evaporation			Ammonia		Nitrogen as Nitrates & Nitrites	Chlorides	Oxygen Consumed	Biochemical Oxygen Demand	Alkalinity	Turbidity	
	Total	Loss on Ignition	Susp. Solids	Total Free	Total Albuminoids							
1	36	20	8	.128	.080	.042	3.1	3.6	1.2	18	5	7.2	96.5
2	41	20	10	.048	.232	.058	3.0	3.3	2.3	15	5	7.0	96.8
3	52	24	6	.088	.168	.133	4.0	3.4	1.7	21	5	7.1	96.8

*Composite Samples Collected Over 12 Hour Period

TABLE XIII
CHEMICAL ANALYSES
OF
WESTFIELD RIVER

*(Test Taken Oct. 19-20, 1937)

Station	PARTS PER MILLION BY WEIGHT											Hydrogen ION Concentration	Average Dissolved Oxygen % Saturation
	Residue on Evaporation			Ammonia		Nitrogen as Nitrates & Nitrites	Chlorides	Oxygen Consumed	Biochemical Oxygen Demand	Alkalinity	Turbidity		
	Total	Loss on Ignition	Susp. Solids	Total Free	Total Albuminoids								
1	57	20	15	.013	.212	.075	3.6	3.5	3.0	20	6	7.0	96.7
2	74	24	17	.012	.368	.042	4.0	5.6	3.9	18	6	6.9	82.7
3	70	24	9	.040	.284	.091	4.1	4.1	2.9	22	6	7.1	88.5

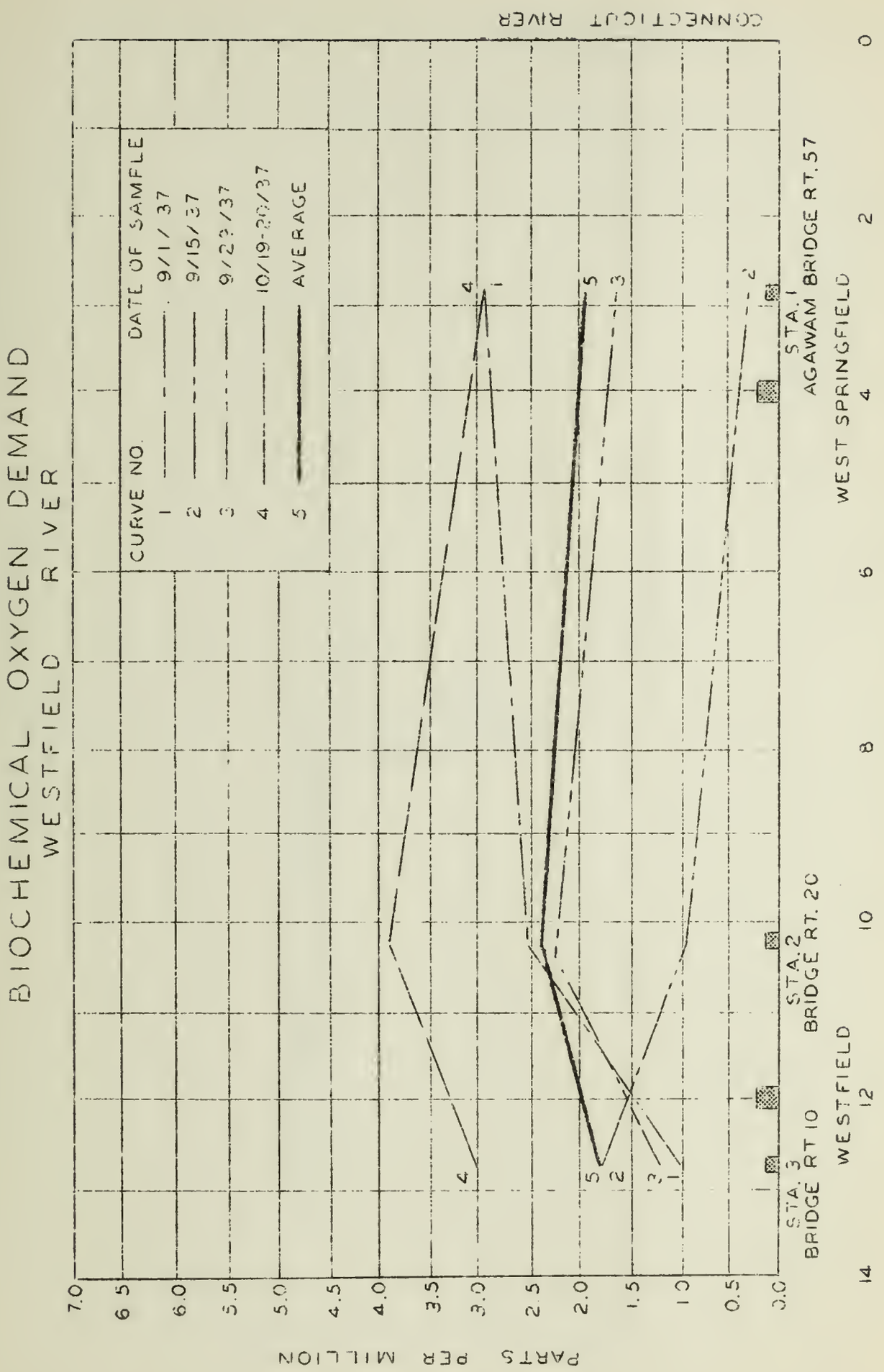
*Composite Samples Collected Over 24 Hour Period

TABLE XIV

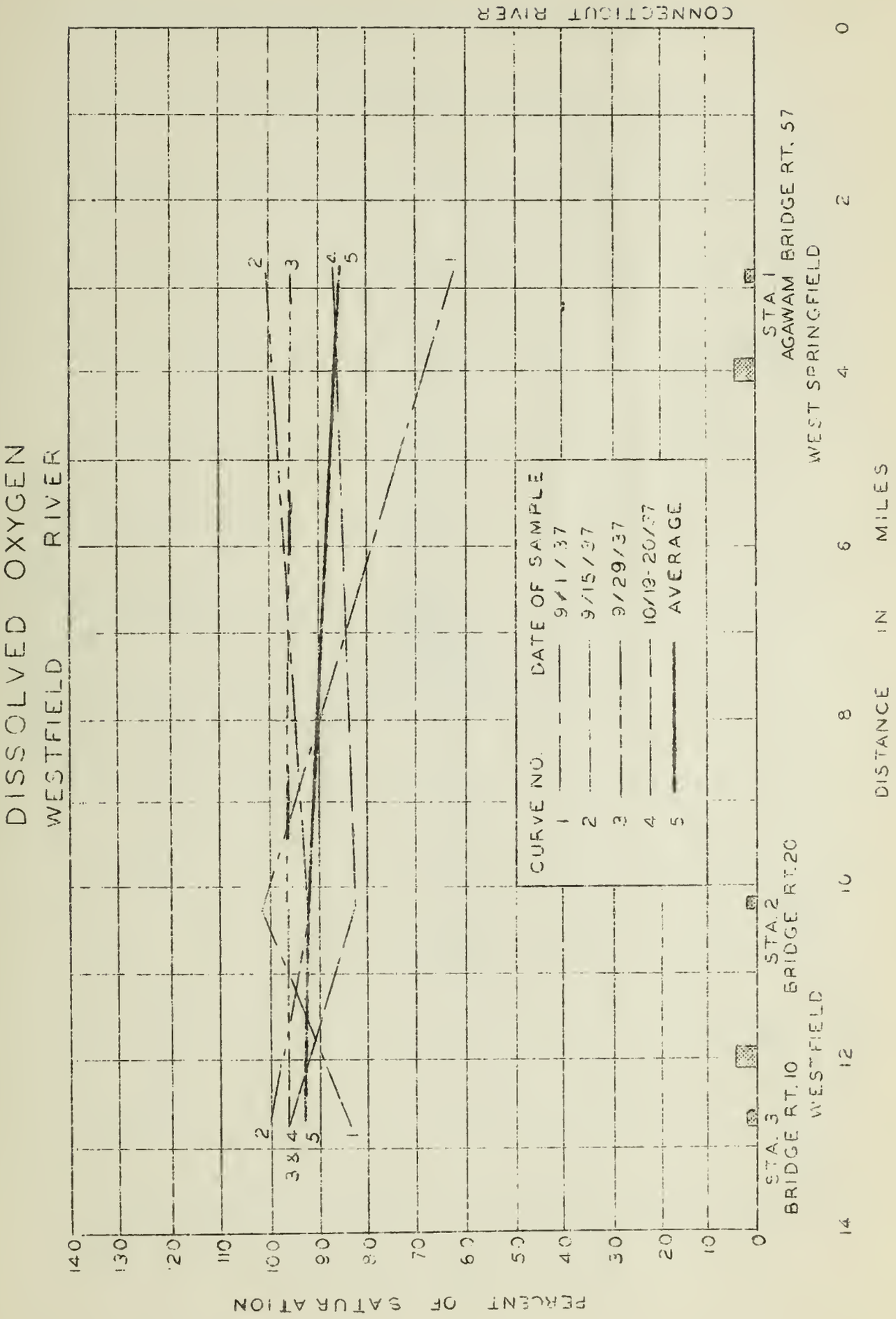
CHEMICAL ANALYSES
OF
WESTFIELD RIVER

(Average of Tests Taken Sept. 1 - Oct. 20, 1937)

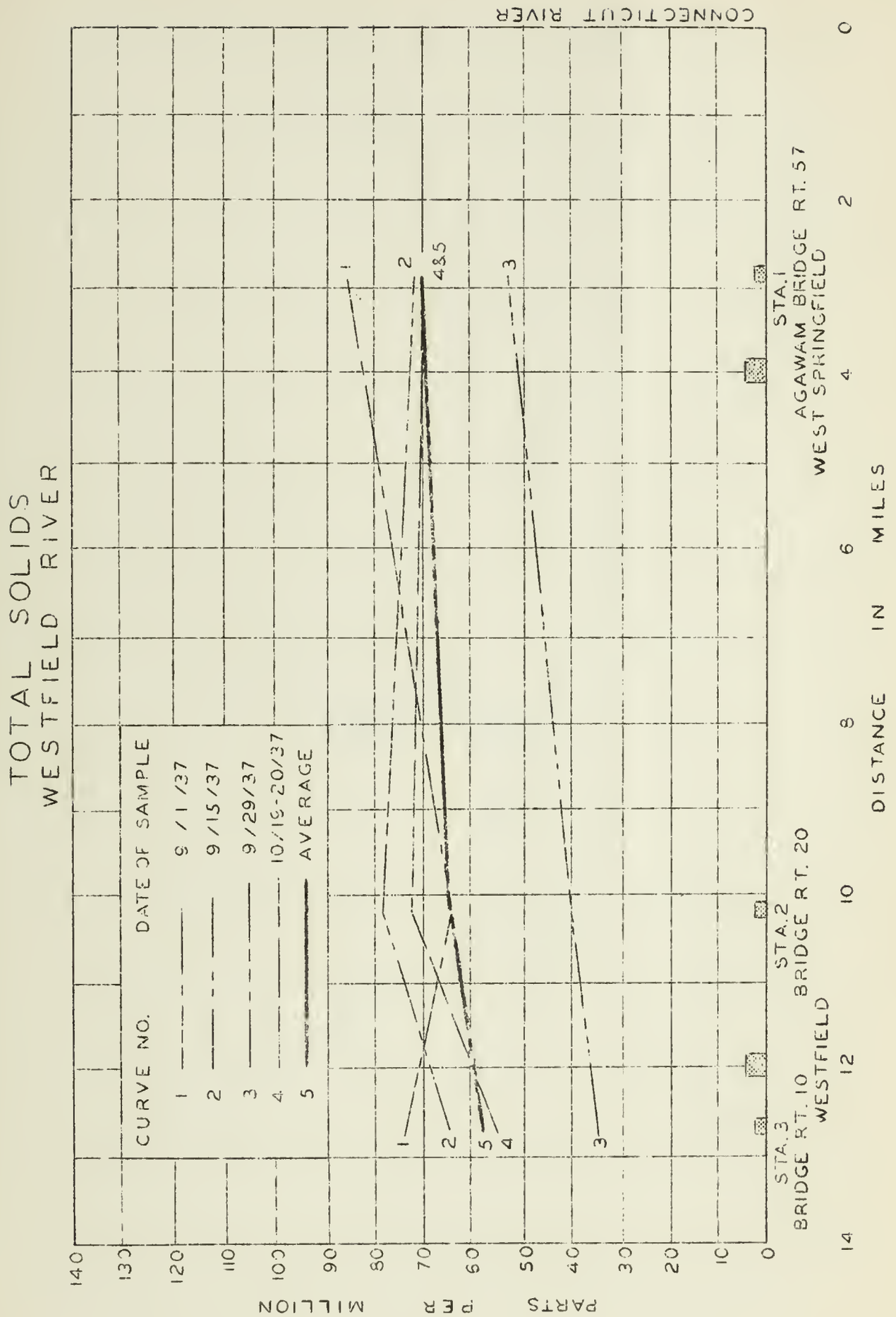
Station	PARTS PER MILLION BY WEIGHT										Hydrogen ION Concentration	Average Dissolved Oxygen % Saturation
	Residue on Evaporation			Ammonia		Nitrogen as Nitrates & Nitrites	Chlorides	Oxygen Consumed	Biochemical Oxygen Demand	Alkalinity	Turbidity	
	Total	Loss on Ignition	Susp. Solids	Total Free	Total Albuminoids							
1	58	23	10	.065	.136	.077	2.7	2.9	1.8	17	5	7.1	94.4
2	65	25	14	.035	.225	.092	3.3	4.9	2.4	15	5	6.9	94.0
3	70	25	9	.050	.249	.127	3.3	4.5	1.9	20	5	7.0	87.5


BIOCHEMICAL OXYGEN DEMAND
WESTFIELD RIVER
CURVE NO. DATE OF SAMPLE
1 9/1/37
2 9/15/37
3 9/23/37
4 10/19-20/37
5 AVERAGE
PARTS PER MILLION
DISTANCE IN MILES
CONNECTICUT RIVER
WEST SPRINGFIELD
STA. 1
AGAWAM BRIDGE RT. 57
STA. 2
BRIDGE RT. 20
WESTFIELD
STA. 3
BRIDGE RT 10

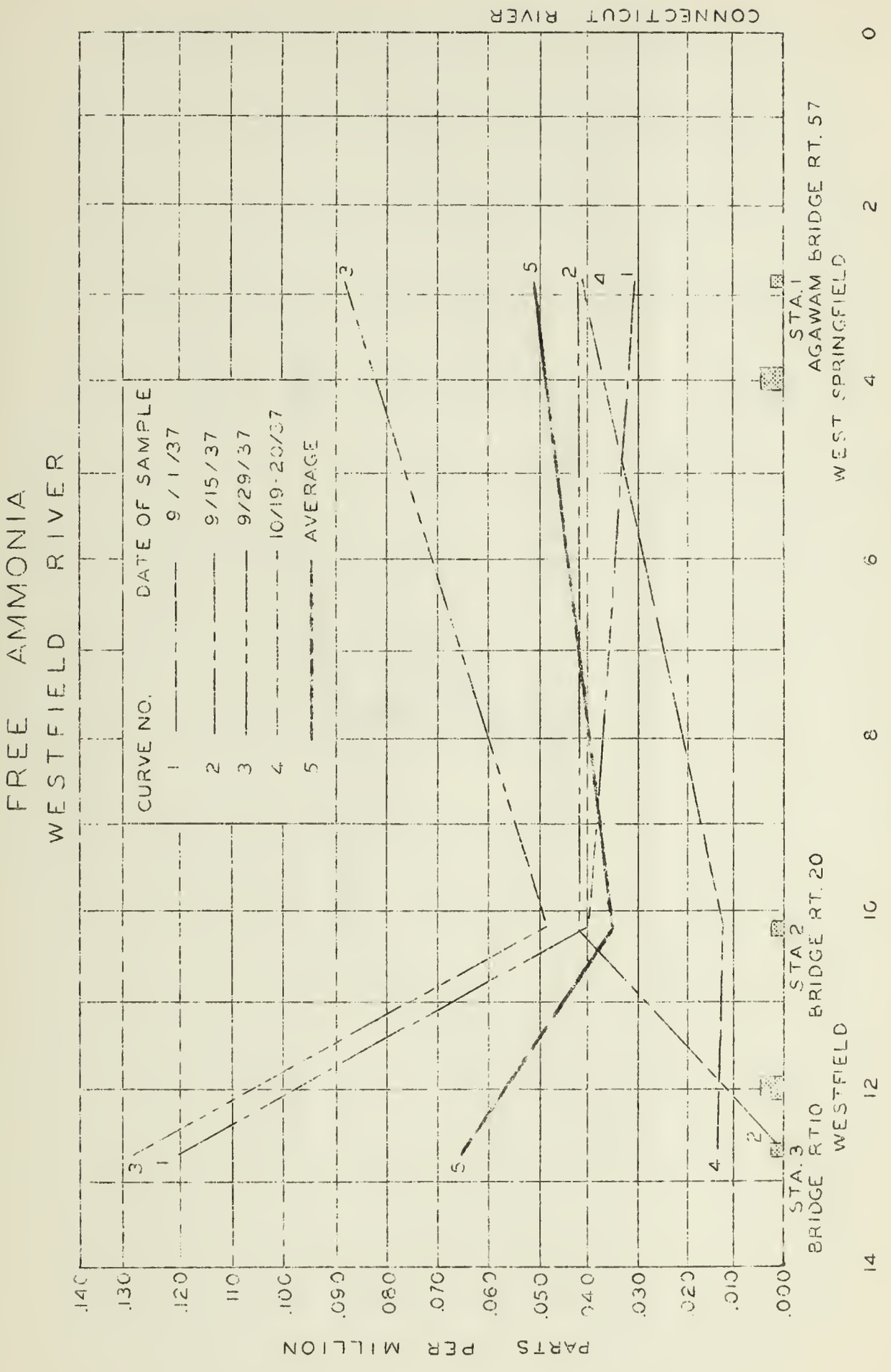
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DISSOLVED OXYGEN
WESTFIELD RIVER
CONNECTICUT RIVER
PERCENT OF SATURATION
DISTANCE IN MILES
STA. 1
AGAWAM BRIDGE RT. 57
WEST SPRINGFIELD
STA. 2
BRIDGE RT. 20
WESTFIELD
STA. 3
BRIDGE RT. 10
WESTFIELD
CURVE NO. DATE OF SAMPLE
1 9/1/37
2 9/15/37
3 9/29/37
4 10/19-20/37
5 AVERAGE

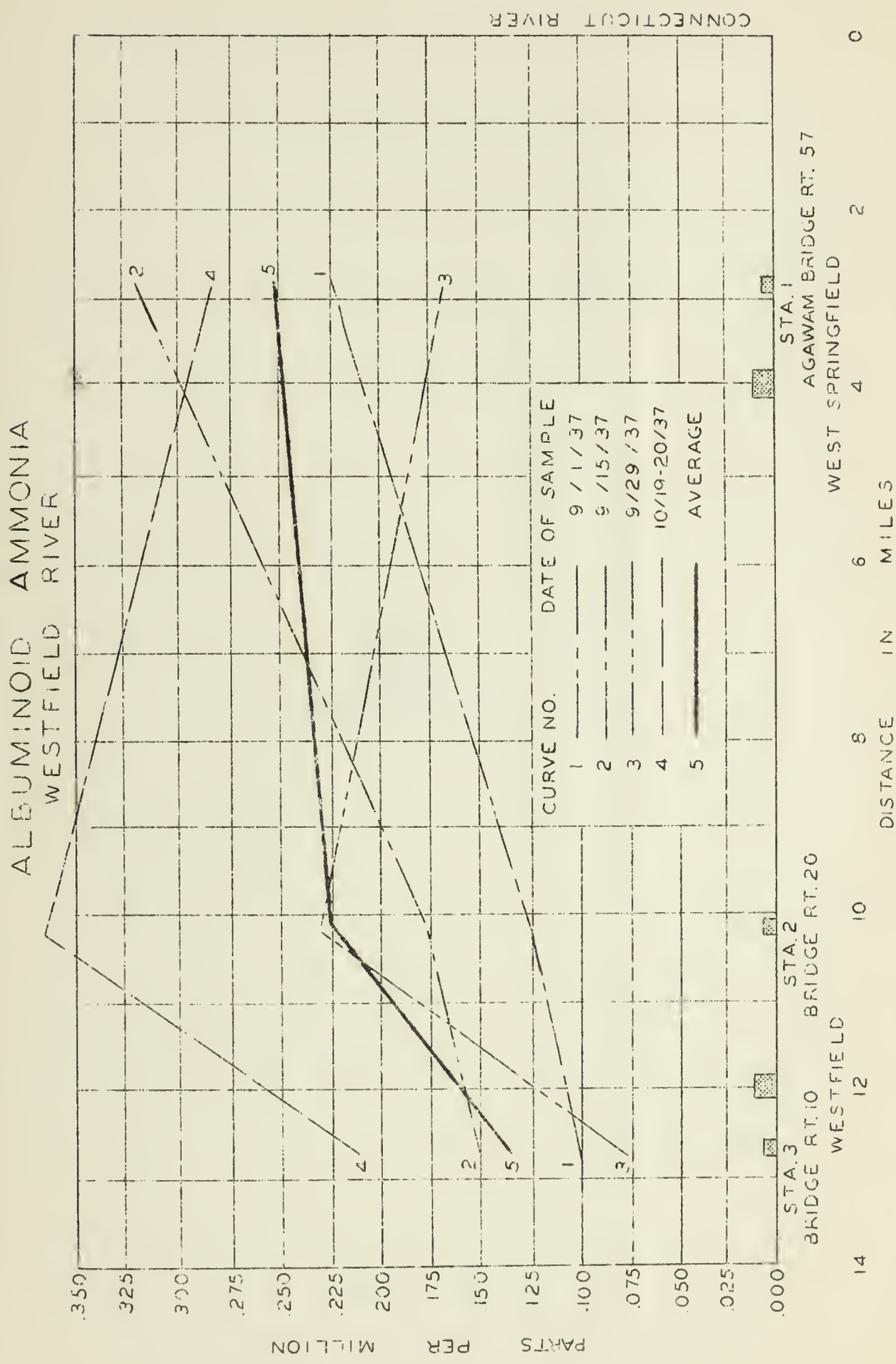
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TOTAL SOLIDS
WESTFIELD RIVER
CURVE NO. DATE OF SAMPLE
1 9/1/37
2 9/15/37
3 9/29/37
4 10/19-20/37
5 AVERAGE
PARTS PER MILLION
DISTANCE IN MILES
CONNECTICUT RIVER
STA.1
AGAWAM BRIDGE RT. 57
WEST SPRINGFIELD
STA.2
BRIDGE RT. 20
STA.3
BRIDGE RT. 10
WESTFIELD
485

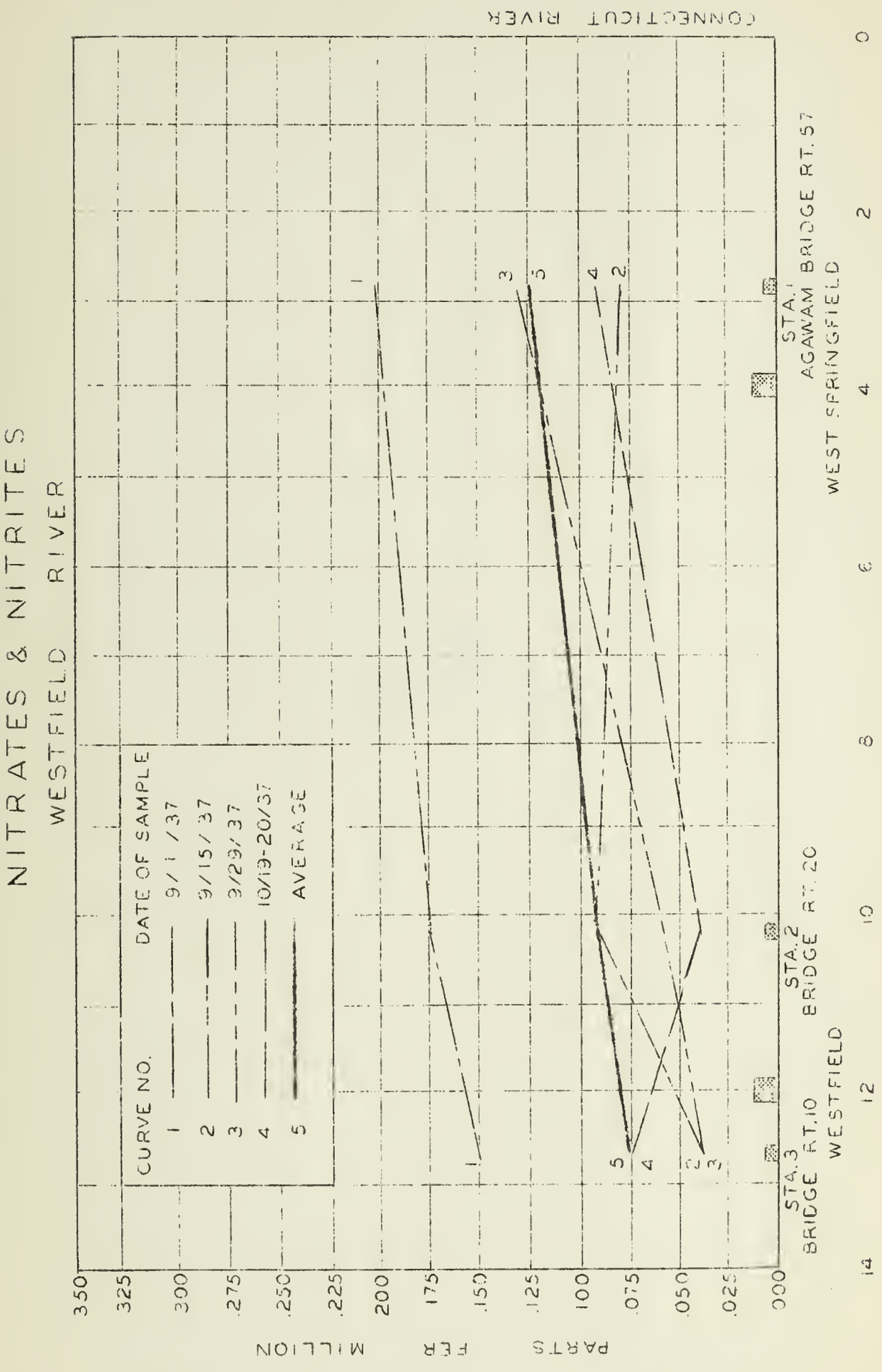
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FREE AMMONIA
WESTFIELD RIVER
CURVE NO. DATE OF SAMPLE
1 9/1/37
2 9/15/37
3 9/29/37
4 10/19-20/37
5 AVERAGE
PARTS PER MILLION
.140
.130
.120
.110
.100
.090
.080
.070
.060
.050
.040
.030
.020
.010
.000
DISTANCE IN MILES
14
12
10
8
6
4
2
0
CONNECTICUT RIVER
STA. 1
AGAWAM BRIDGE RT. 57
WEST SPRINGFIELD
STA. 2
BRIDGE RT. 20
WESTFIELD
STA. 3
BRIDGE RT 10
WESTFIELD

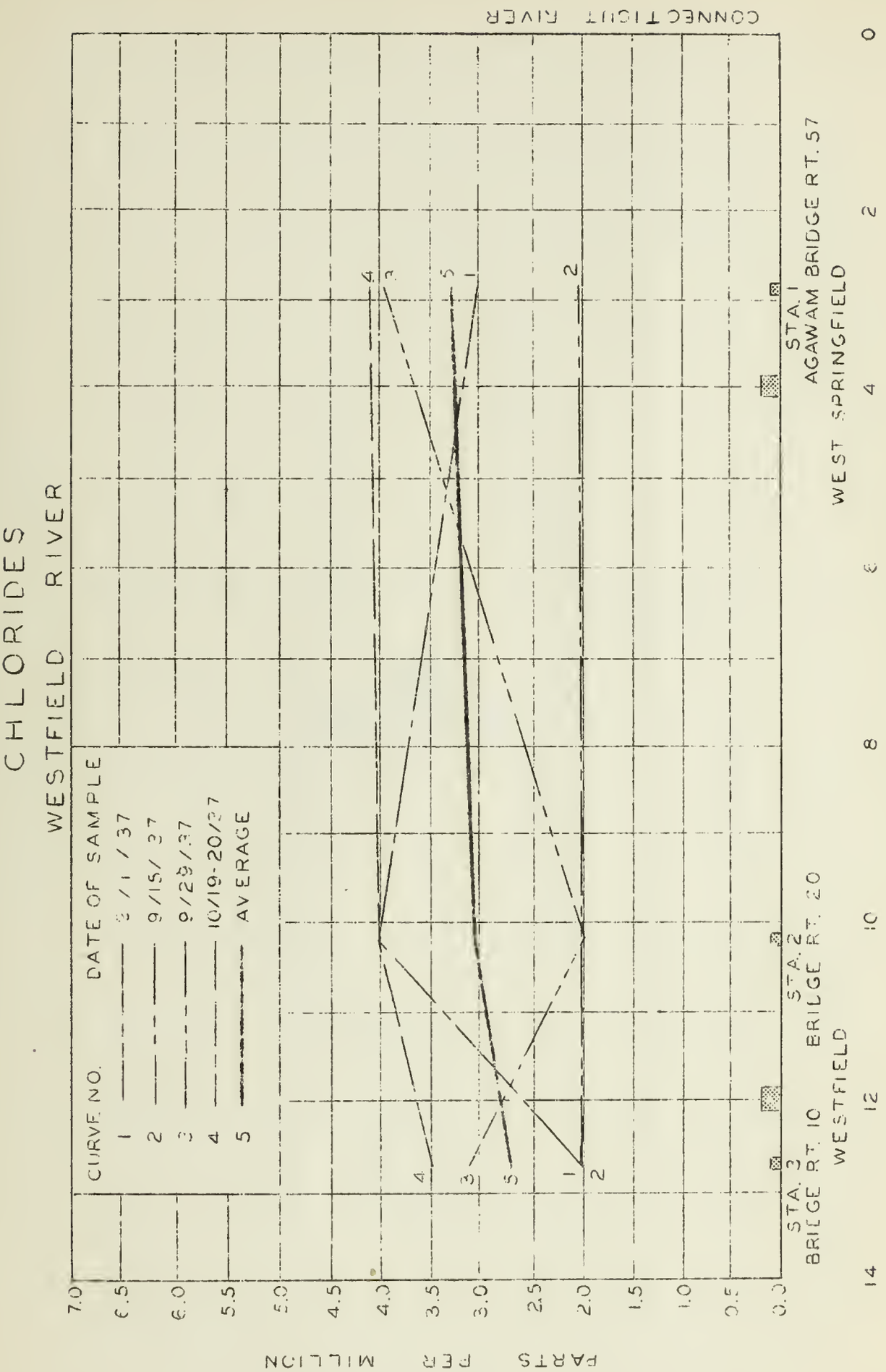
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ALBUMINOID AMMONIA
WESTFIELD RIVER
PARTS PER MILLION
.350
.325
.300
.275
.250
.225
.200
.175
.150
.125
.100
.075
.050
.025
.000
CURVE NO. DATE OF SAMPLE
1 9/1/37
2 9/15/37
3 9/29/37
4 10/19-20/37
5 AVERAGE
STA.3 BRIDGE RT.10 WESTFIELD
STA.2 BRIDGE RT.20
STA.1 AGAWAM BRIDGE RT. 57 WEST SPRINGFIELD
CONNECTICUT RIVER
14 12 10 8 6 4 2 0
DISTANCE IN MILES

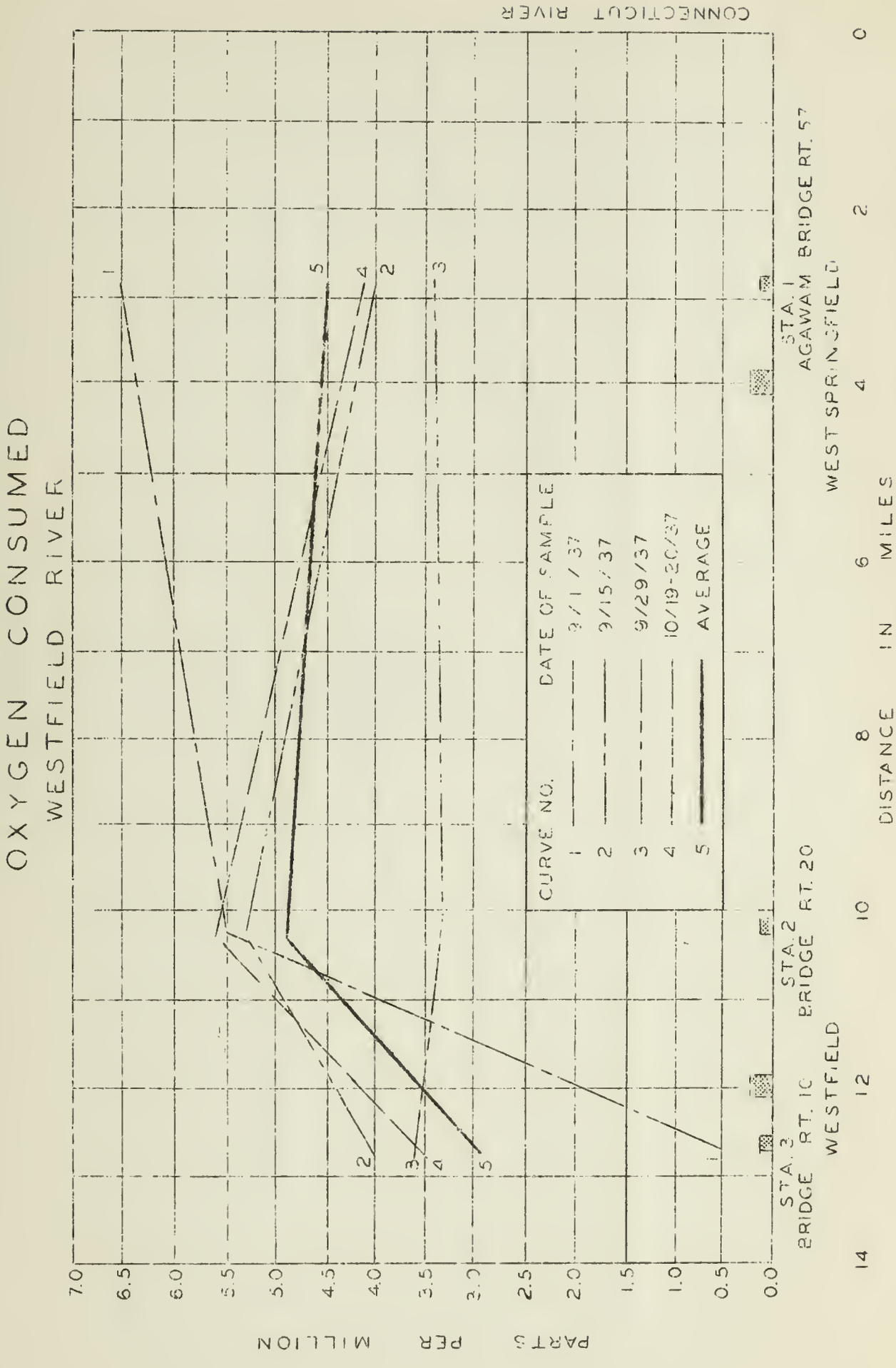
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NITRATES & NITRITES
WESTFIELD RIVER
CONNECTICUT RIVER
CURVE NO. DATE OF SAMPLE
1 9/1/37
2 9/15/37
3 3/29/37
4 10/19-20/37
5 AVERAGE
STA.1 AGAWAM BRIDGE RT. 57 WEST SPRINGFIELD
STA.2 BRIDGE RT. 20
STA.3 BRIDGE RT. 10 WESTFIELD
PARTS PER MILLION
DISTANCE IN MILES
350
325
300
275
250
225
200
175
150
125
100
075
050
025
000
0
2
4
6
8
10
12
14

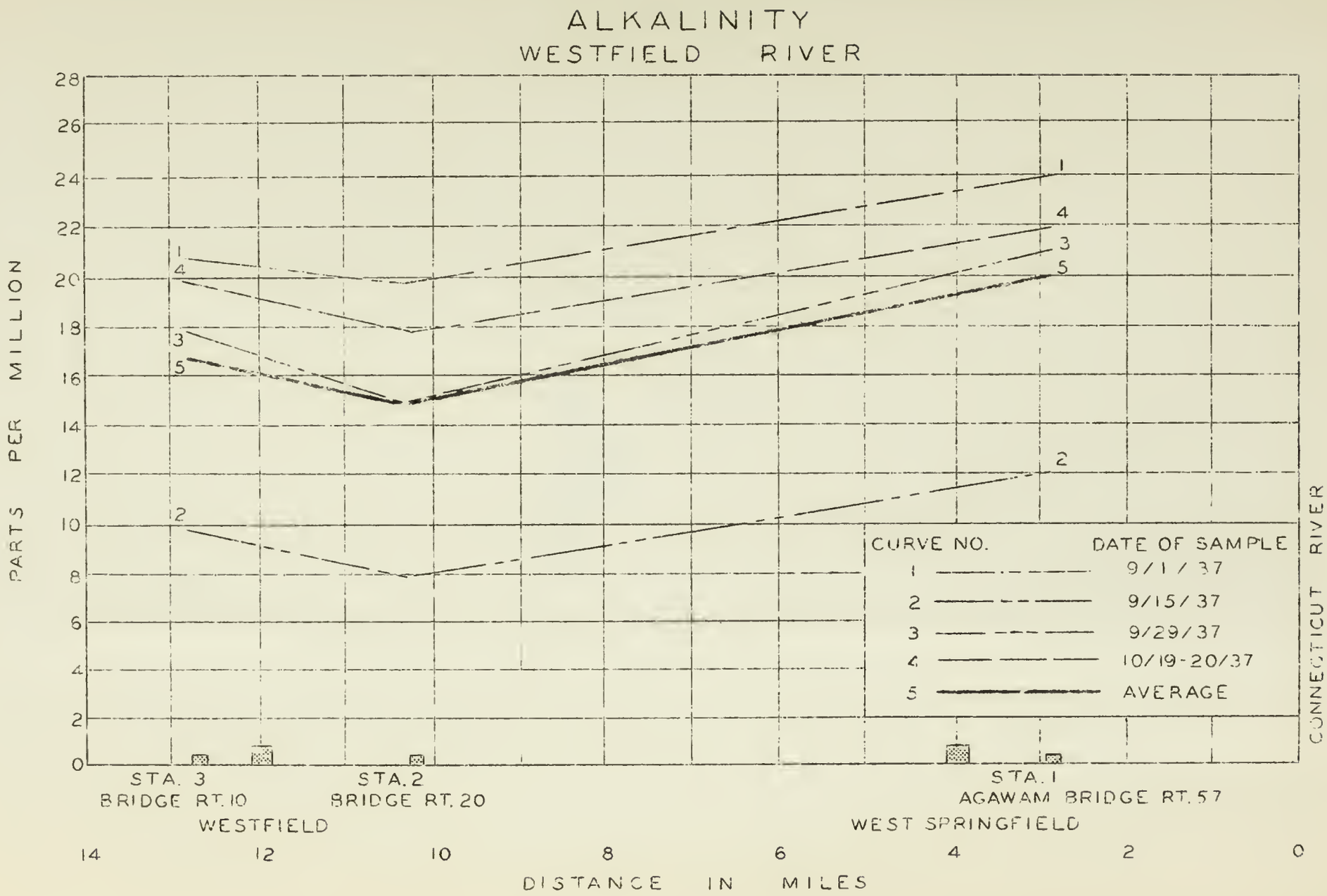
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OF THE
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CHLORIDES
WESTFIELD RIVER
CURVE NO. DATE OF SAMPLE
1 2/1/37
2 9/15/37
3 9/23/37
4 10/19-20/37
5 AVERAGE
PARTS PER MILLION
DISTANCE IN MILES
CONNECTICUT RIVER
STA. 1
AGAWAM BRIDGE RT. 57
WEST SPRINGFIELD
STA. 2
BRIDGE RT. 20
WESTFIELD
STA. 3
BRIDGE RT. 10
WESTFIELD

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OXYGEN CONSUMED
WESTFIELD RIVER
PARTS PER MILLION
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
CURVE NO. DATE OF SAMPLE
1 3/1/37
2 3/15/37
3 3/29/37
4 10/19-20/37
5 AVERAGE
STA. 3
BRIDGE RT. 10
WESTFIELD
STA. 2
BRIDGE RT. 20
STA. 1
AGAWAM BRIDGE RT. 57
WEST SPRINGFIELD
CONNECTICUT RIVER
14
12
10
8
6
4
2
0
DISTANCE IN MILES

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ALKALINITY
WESTFIELD RIVER
PARTS PER MILLION
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1
4
3
5
2
CURVE NO. DATE OF SAMPLE
1 9/1/37
2 9/15/37
3 9/29/37
4 10/19-20/37
5 AVERAGE
STA. 3
BRIDGE RT. 10
WESTFIELD
STA. 2
BRIDGE RT. 20
STA. 1
AGAWAM BRIDGE RT. 57
WEST SPRINGFIELD
CONNECTICUT RIVER
14
12
10
8
6
4
2
0
DISTANCE IN MILES

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S U M M A R Y

SUMMARY

A review of the preceding text in which existing conditions of the cities and towns in the Westfield River watershed area are detailed, leaves little question as to the need for concerted action for definite regulation in the discharge of wastes to the Westfield's waters if fish life is to be preserved, recreational sites and facilities enhanced and the general health of the communities themselves are to receive a full measure of protection.

An analysis of Table XV, "Sources of Pollution in Westfield River Valley", shows a total of 233 individual outlets discharging to the Westfield River and its tributaries. Of this total 28 are municipal outlets while 205 are those of private interests, either industrial concerns or those of individual home owners, caring for their domestic sewage alone. Only 6 of the 28 municipal outlets are submerged, the others being so-called bank outlets that discharge their wastes close to shore and near the surface of the river.

Industrial wastes amount to a total of 6,916,200 gallons per day, principally those wastes usual to the manufacture of paper. These wastes are discharged direct to the Westfield River and its tributaries, leaving any clarification process to the natural action of the streams themselves. None of the cities or towns or industries located therein have sewage treatment works. The only sewage treatment works in the valley of the Westfield River is the one at the Westfield State Sanatorium of the State Department of Public Health.

The volume of diluting water in this stream has generally been sufficient to prevent a general nuisance condition, although local nuisances exist at numerous points where the sewage is discharged on the banks of the river and tributaries. There is a demand by various local groups for the treatment of sewage and industrial wastes in order that the valley may be used more extensively for recreational purposes.

Cobble Mountain Reservoir, Springfield's thousand acre water supply of 22 billion gallons, is stored among the hills of Granville, Blandford and Russell. The reservoir and watershed surrounding it, comprising an area of nearly fifty square miles, are set apart in this report because this watershed is protected from pollution by the City of Springfield.

The Massachusetts Department of Public Health, in its report to the legislature of 1938, House Document #1735, recommended that

TABLE XV

SOURCES OF POLLUTION

IN

WESTFIELD RIVER VALLEY

CITY OR TOWN	MUNICIPAL SEWER OUTLETS	PRIVATE SEWER OUTLETS	CESSPOOLS AND SEPTIC TANKS NEAR OR OVER-FLOWING TO STREAM	PRIVIES OVER OR NEAR STREAM
Agawam	6	7	0	0
Ashfield	0	0	0	0
Becket	0	3	27	0
Blandford	0	0	0	0
Chester	0	49	1	2
Chesterfield	0	2	0	1
Cummington	0	0	0	0
Goshen	0	0	0	0
Granville	0	14	1	0
Hawley	0	0	0	0
Holyoke	0	0	0	0
Huntington	6	40	0	1
Middlefield	0	0	0	0
Montgomery	0	0	0	0
Otis	0	0	0	0
Peru	0	0	0	0
Plainfield	1	0	0	0
Russell	* 1	32	0	0
Savoy	0	0	0	0
Southampton	0	0	0	0
Southwick	0	0	0	0
Tolland	0	0	0	0
Washington	0	0	0	0
Westfield	7	11	0	0
Westhampton	0	0	0	0
West Springfield	6	13	1	0
Windsor	* 1	0	0	0
Worthington	0	0	0	0
TOTALS	28	171	30	4

* Recorded subsequent to House Document #2050

TABLE XVI

INDUSTRIAL WASTES
DISCHARGED TO THE WESTFIELD RIVER
AND ITS TRIBUTARIES

CITY OR TOWN	KIND OF MANUFACTURED PRODUCT PROCESS OR WASTE	QUANTITY OF WASTE (GALLONS PER DAY)
Agawam	Rag paper-wash water-bleach	831,300
Ashfield	None	None
Becket	Wash water-cellulose fibre	774,000
Blandford	None	None
Chester	Ground emery-wash water	18,000
Chesterfield	None	None
Cummington	None	None
Goshen	None	None
Granville	None	None
Hawley	None	None
Holyoke	None	None
Huntington	Men's worsted suitings-soap-soda-wash water	40,000
Middlefield	None	None
Montgomery	None	None
Peru	None	None
Plainfield	None	None
Russell	Paper-wash water-fibre waste	2,338,000
Savoy	None	None
Southampton	None	None
Southwick	None	None
Tolland	None	None
Washington	None	None
Westfield	Acid-wash water	774,500
Westhampton	None	None
West Springfield	Paper machine rag washing-wash water from imitation leather products-cooling wastes from metal products	2,089,920
Windsor	None	None
Worthington	None	None
	TOTAL	6,916,220

the City of Springfield, acting jointly with the towns of West Springfield, Agawam and Longmeadow, study a plan for the collection and treatment of the sewage of these municipalities at works to be constructed in the Town of Agawam near the mouth of the Westfield River.

Plans have since been prepared by the City of Springfield and approved by the Department. The system, under construction for over a year at a total estimated cost of $2,700,000 has recently been completed and placed in operation.

West Springfield has presented preliminary plans for the collection of its sewage and treatment with that of the City of Springfield.

Due to the fact that the Springfield treatment plant is located in Agawam, Springfield has agreed to treat the sewage from Agawam in lieu of taxes on the plant site. Therefore, Agawam is engaged in a program of constructing intercepting sewers to carry its sewage to the Springfield plant.

Thus, action by the City of Westfield and towns of Becket, Chester, Huntington, Russell, Granville, and West Springfield would eliminate most of the known sources of pollution in the Westfield River Watershed.

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